JUDGE NATHAN

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

Packet for Filing a Complaint

Date:	October 25, 2019
Plaintiff:	Thaddeus Gabara
Defendant:	Facebook, INC.
Case No.:	________________

19 CV 9890

Thaddeus Gabara (pro se)
Owner and co-inventor of 'Patent-in-Suit'
P.O. Box 512
New Providence, NJ 07974
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Telephone: (908) 821-6590

Staff:

This is a new submission of a Complaint to the United States District Court for the Southern District Of New York. Please enter the below-identified components into the records as follows:

I love America for providing me a pathway to justice.

Thaddeus Gabara (pro se)
Owner and co-inventor of 'Patent-in-Suit'
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New Providence, NJ 07974
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THADDEUS GABARA – PRO SE

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

THADDEUS GABARA, Plaintiff, v. FACEBOOK, INC., Defendant.	Case No: **COMPLAINT FOR PATENT INFRINGEMENT AND JURY DEMAND**

Plaintiff THADDEUS GABARA ("Gabara" or "Plaintiff") sent correspondence to Mr. Mark Zuckerberg (Chairman and CEO of Facebook) that arrived via USPS at the Headquarters of Facebook, INC., on October 11, 2019 at 10:31AM containing an offer that may have averted the present situation. However, Gabara failed to receive any type of reply or correspondence by yesterday's deadline. Today, Plaintiff, using his 'pro se' rights, hereby brings this action for patent infringement against Defendant FACEBOOK, INC. ("Facebook" or "Defendant"). Gabara alleges the Defendant of infringing the following validly issued patent: U.S. Patent No. 8,930,131, titled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map," as follows:

PARTIES

1. Plaintiff maintains his principal place of residence in the city of Murray Hill, NJ 07974 with a mailing address of : Thaddeus Gabara, P.O. Box 512, New Providence, NJ 07974.

2. Defendant Facebook, Inc. is a Delaware corporation with a principal place of business at 1 Hacker Way, Menlo Park, California 94025. Facebook has an established brick and mortar business at 770 Broadway, Floor 8, New York, New York 10003.

3. Facebook also has a presence in the virtual world and owns and operates the websites identified as 'www.facebook.com' and 'facebook360.fb.com.'[1] On information and belief, Facebook requires users to register before the user is able to access any of the 'features' (offerings, products, social information, website services, etc.) available in Facebook's virtual world. There are over 2.4 billion active Facebook users worldwide.

4. Facebook also has a Facebook page in the virtual world identified as 'facebook.com/Facebook360.' On information and belief, these website and Facebook pages market, offer, and distribute its 'features' to Facebook users. On information and belief, one example of these 'features' that Defendant's website and Facebook page markets, offers, and

[1] The leading text segment 'https://' may be suppressed in this document to simplify reciting the full web addresses.

distributes is identified as '*Facebook 360.*'

5. Facebook released *Facebook 360* on March 8, 2017. The logo for *Facebook 360* is shown in **Figure 1**. On Defendant's website page[2], Defendant announces that '*Facebook 360*' is "A stunning and captivating way for publishers and content creators to share immersive stories, places and experiences with their fans." On information and belief, when the Facebook user of the portable unit is logged into Facebook, *Facebook 360* is available and accessible to the portable unit if a Facebook 360 icon (see **Figure 2**) becomes visible.

Figure 1. Logo of *Facebook 360*.

Figure 2. *Facebook 360* icon.

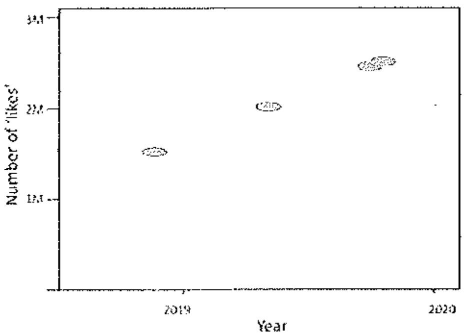

Figure 3. Rapid growth of *Facebook 360*.

6. **Figure 3** illustrates the number of Facebook 'likes' that the *Facebook 360* page located at 'facebook.com/Facebook360' received during the past year. If the 50% growth of likes can be correlated to the growth of total members, *Facebook 360*'s future appears strong. **Table 1** presents the data of Facebook 'likes' extracted using from the website called The WayBack Machine[3] (first three data points). The fourth data point read from the live *Facebook 360* page.

Facebook 360 'likes'	
Date	# of likes
Nov. 20, 2018	1,592,493
Apr. 16, 2019	2,036,936
Sept. 25, 2019	2,366,422
Oct. 19, 2019	2,406,106
Extracted from: The Wayback Machine	

Table 1. Wayback Machine Data.

2 facebook360.fb.com
3 http://web.archive.org/web/20170518111929/https://www.facebook.com/Facebook360/

7. Facebook also rolled out another 'feature' called '*3D Photos*' on October 11, 2018 which they state "bring scenes to life with depth and movement" on a portable unit.[4] Facebook provides, and their users use the *3D photos* icon, as illustrated in **Figure 4**, to gain access to *3D photos*. In March 2014, Facebook acquired Oculus VR, a virtual reality (VR) headset company. On information and belief, Oculus VR offers a family of VR products and VR products manufactured in partnership with other companies, for example, Samsung smartphones and Samsung Gear VR.

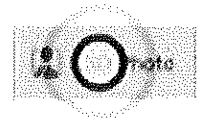

Figure 4. *3D photos* icon.

NATURE OF THE ACTION

8. This is an action for infringement of United States Patent No. 8,930,131 ("the '131 patent") under the Patent Act, 35 U.S.C. § 271, et seq., based on Defendant's unauthorized commercial manufacture, use, importation, offer for sale, and sale of infringing products and services in the United States. This is a patent infringement action to stop Defendant's infringement of the '131 patent entitled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map." The '131 patent is the Patent-in-Suit. Gabara seeks monetary damages and injunctive relief.

JURISDICTION

9. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*, including 35 U.S.C. §§ 271, 281, 283, 284, and 285.

10. This Court has original jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

11. This Court has original jurisdiction over Defendant because it has engaged in systematic and continuous business activities in this District. As described below, Defendant has committed acts of patent infringement giving rise to this action within this District.

[4] https://facebook360.fb.com/2018/10/11/3d-photos-now-rolling-out-on-facebook-and-in-vr/

VENUE

12. Venue is proper in this District under 28 U.S.C. § 1400(b) because Defendant has committed acts of patent infringement within the State of New York and has an established brick and mortar business located in New York City in Lower Manhattan, where Lower Manhattan is a part of this District. In addition, Gabara has suffered harm in this District.

PATENT-IN-SUIT

13. On January 6, 2015, the United States Patent and Trademark Office ("USPTO") duly and legally issued United States Patent No. 8,930,131 ("the '131 Patent" or "the Patent-in-Suit"), entitled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map."

14. The current application No. 14/257,349, now Pat. No. 8,930,131 ("the '131 Patent"), filed on Apr. 14, 2014, which is a continuation of application No. 14/097,386, filed on Dec. 5, 2013, now Pat. No. 8,706,400, which is a continuation of application No. 13/967,299, filed on Aug. 14, 2013, now Pat. No. 8,620,545, which is a continuation of application No. 13/337,251, filed on Dec. 26, 2011, now Pat. No. 8,532,919. The priority date of the '131 Patent due to parentage is Dec. 26, 2011.

15. On October 25, 2019, Helen Gabara, President of TrackThings LLC, assigned the following United States Patent Nos. 8,532,919; 8,620,545; 8,706,400; and 8,930,131 from TrackThings LLC to Thaddeus Gabara, the Plaintiff.

16. The assignment of the patents to the Plaintiff was recorded in the United States Patent and Trademark Office (USPTO) on October 25, 2019.

17. Gabara is the assignee of all rights, titles and interests in United States Patent No. 8,930,131 ("the '131 Patent") and all of its parent applications to and including United States Patent Application No. 13/337, 251 filed with a priority date of December 26, 2011.

19. Gabara holds all rights to enforce and prosecute actions for infringement and to

collect damages for all relevant times against infringers of the Patent-in-Suit.

20. Accordingly, Gabara, one of the inventors of the '131 Patent, is exercising his 'pro se' litigant rights and possesses the exclusive right and standing to prosecute the present action for infringement of the Patent-in-Suit by Defendant.

21. A true and correct copy of the '131 Patent is attached hereto as **Exhibit 1** and incorporated herein by reference.

22. The '131 Patent is valid and enforceable.

COUNT 1: INFRINGEMENT OF THE PATENT-IN-SUIT

23. Gabara re-alleges and incorporates by reference the allegations of the paragraphs of this Complaint as though fully set forth herein.

24. **Direct Infringement.** Defendant knowingly and actively aided and abetted the direct infringement of one or more claims of the '131 Patent in at least this District by making, using, offering to sell, selling and/or importing, without limitation, that infringe at least exemplary claims 1-6, 8-13, and 15-19 of the '131 Patent (the " '131 Patent Claims") literally or by the doctrine of equivalence. Both *Facebook 360* and *3D photos* when used on portable units directly and/or indirectly develops, designs, manufactures, distributes, markets, offers to sell and/or sells infringing products and services in the United States, including in the District of Southern New York, and otherwise purposefully directs infringing activities to this District in connection with its products and services.

25. On information and belief, numerous other services that Facebook offers, such as, Instagram, WhatsApp, News Feed, Facebook Live, Video, Instant Articles, Branded Content, Messenger, Today in Availability, Pages, Audience Network, Ad Breaks, and Ads on Facebook, also infringe the claims of the '131 Patent and have been made, used, sold, imported, and offered for sale by Defendant and/or its users when used with either *Facebook 360* or *3D photos*.

26. Despite such actual knowledge, Defendant continues to make, use, test, sell, offer for sale, market, and/or import into the United States, products that infringe the '131 Patent. On

information and belief, Defendant has also continued to distribute product literature and website materials inducing end users and others to use its products in the customary and intended manner that infringes the '131 Patent. Thus, on information and belief, Defendant is directly infringing, contributing to and/or inducing the infringement of the '131 Patent.

27. Defendant infringes[5] the '131 patent of claim 8 as presented (the claim elements are in italics);

Figure 5. A portable unit ...

28. "*A portable unit comprising:*" In **Figure 5**, the **portable unit** is visible.

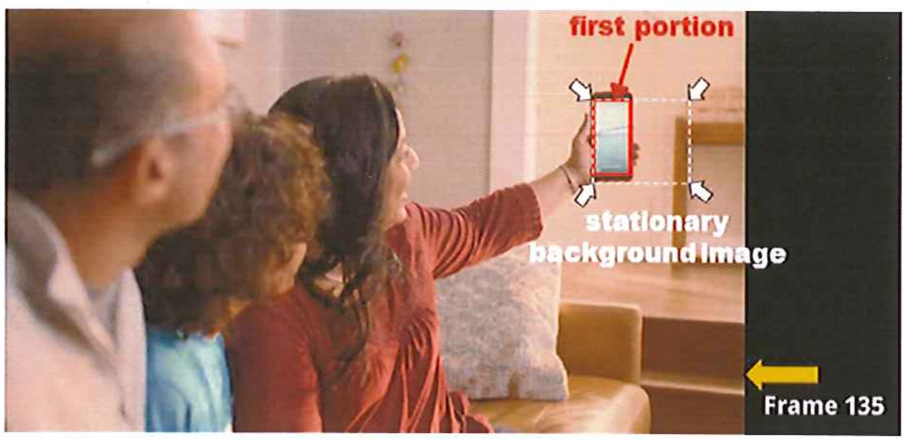

Figure 6. ...a first portion of a stat...

29. "***a first portion of a stationary background image***" In **Figure 6**, the **stationary background image** is indicated by white dashed box as highlighted by the white arrows. A **first portion** is a portion of the **stationary background image.**

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[5] Frame 135 and frame 149 were selected from the video posted on *Facebook 360*: https://facebook360.fb.com/360-photos/ Extracted from site (on 10/8/19); Name of video: https://s0.wp.com/wp-content/themes/vip/fbspherical/media/360-panorama-loop-v2.mp4

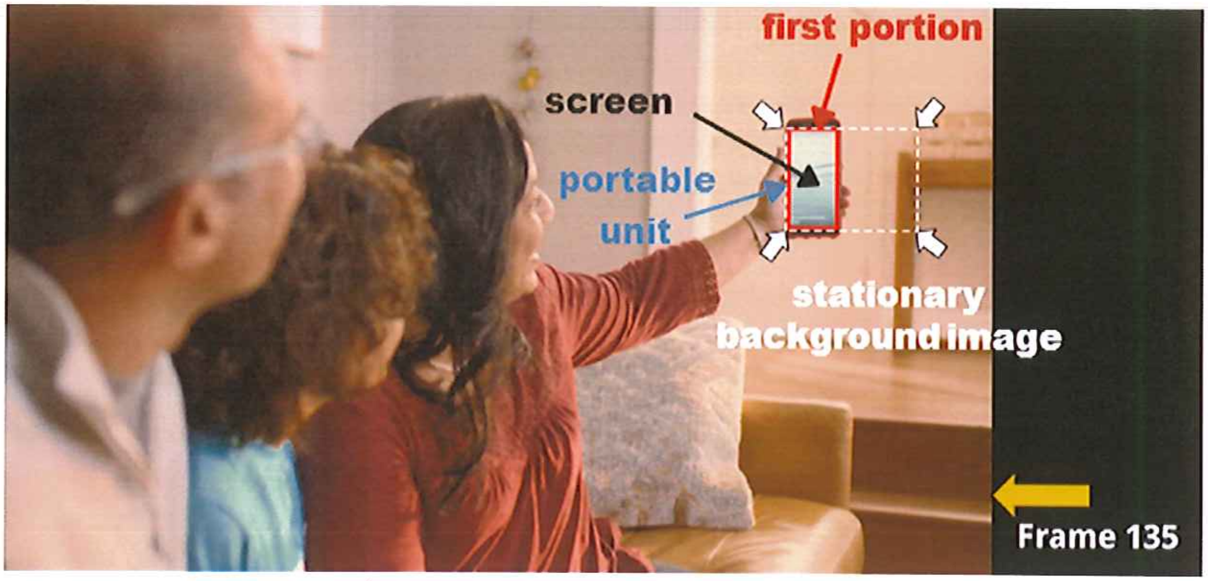

Figure 7. ...displayed on a screen ...

30. "*displayed on a screen of the portable unit;*" In **Figure 7**, the **first portion** is displayed on the **screen**.

Figure 8. ... a first image and a sec...

31. "*a first image and a second image located in the stationary background image;*" Both **first image** and **second image** are within the white **stationary background image**. (See **Figure 8.**)

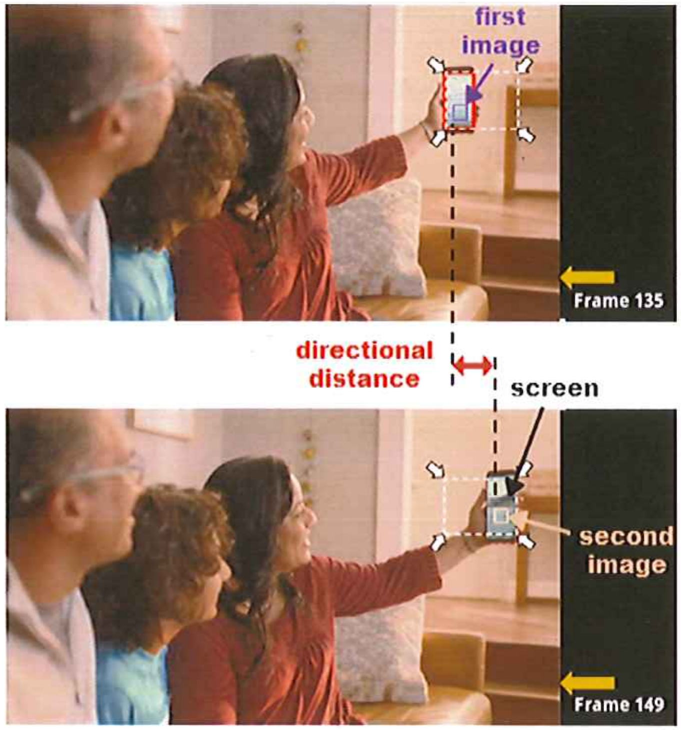

Figure 9. ...the second image in the stat...

32. "*the* ***second image*** *in the* ***stationary background image*** *displaced from the first image in the stationary background image by a* ***directional distance;***" Comparing Frames 135 and 149 in **Figure 9**, the **directional distance** includes the distance and direction between the **first image** and the **second image**.

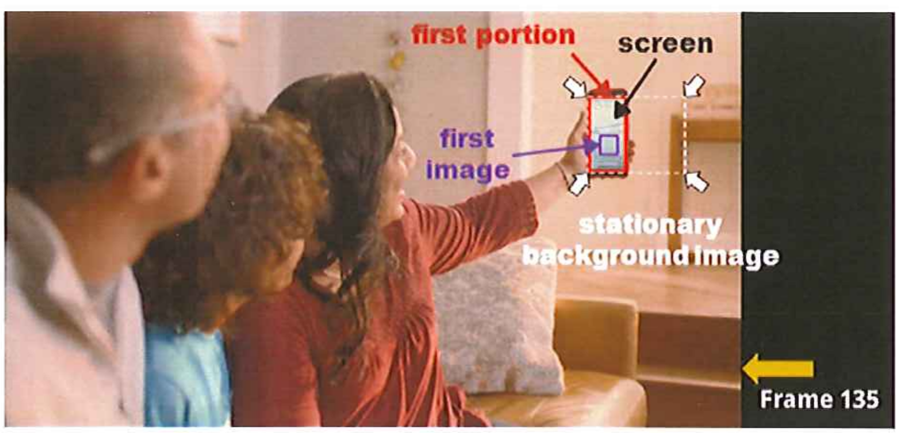

Figure 10. ...the first image in the first ...

33. "*the* ***first image*** *in the* ***first portion*** *of the* ***stationary background image*** *displayed on the* ***screen*** *of the* ***portable unit,*** *wherein*" In **Figure 10**, the **first image** is visible on the screen.

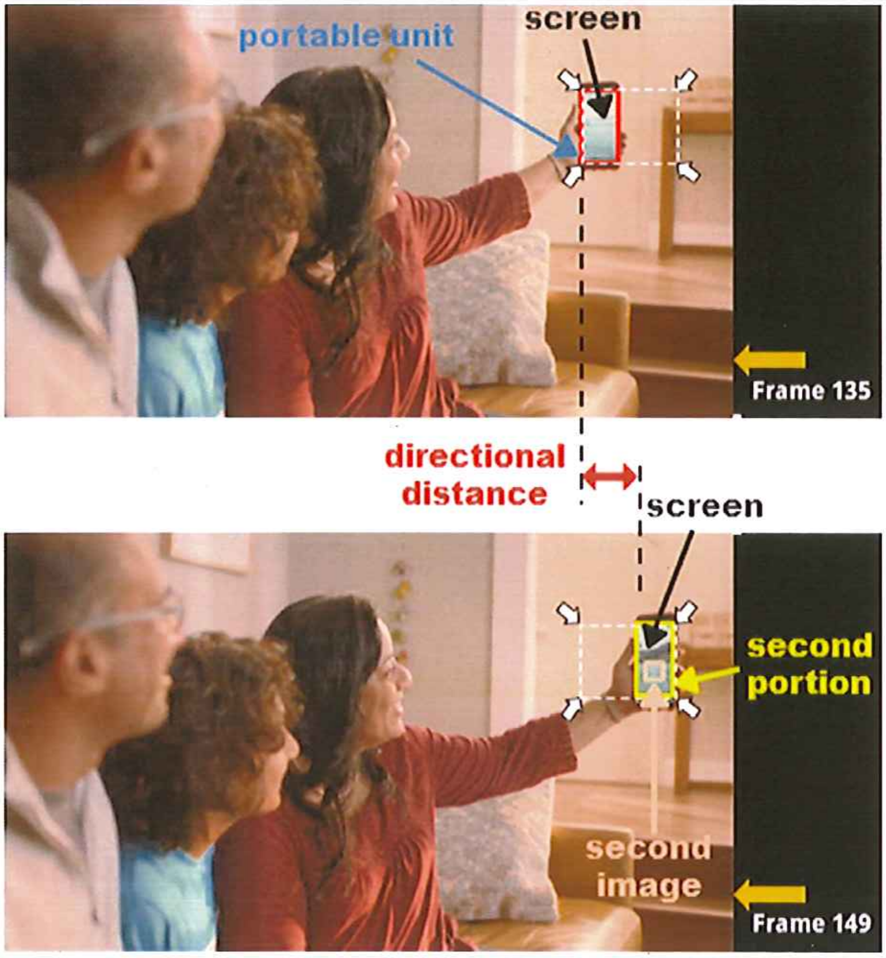

Figure 11. …the portable unit is mov…

34. *"the* ***portable unit*** *is moved in at least one of the* ***orientations*** *of the* ***directional distance*** *to display on the* ***screen*** *of the* ***portable unit*** *the* ***second image*** *located in a* ***second portion*** *of the stationary background image."* In Figure 11, by comparing slides 135 and 149, the **portable unit** moved in at least one of the **orientations** of the **directional distance** across the **stationary background image** between slide 135 and slide 149. Doing so caused the **second image** to be displayed on the **screen** of the **portable unit**.

38. **Exhibit 2** presents a claim chart comparing the Exemplary '131 Patent Claims to *Facebook 360*. As set forth in the claim chart, *Facebook 360* practices the technology claimed by the '131 Patent. Accordingly, *Facebook 360* being incorporated in these charts satisfies all elements of the Exemplary '131 Patent Claims.

39. **Induced Infringement.** Defendant actively, knowingly, and intentionally has been and continues to induce infringement of the '131 Patent, literally or by the doctrine of equivalence, by offering products and services to their users for use in end-user products in a manner that infringes one or more claims of the '131 Patent. For example, Facebook induces users to commit patent infringement by providing on its website page[6] a list of 14 different 360 Cameras that can be used with Facebook's product and service *Facebook 360*. These 360 Cameras comprise: Panono, RICOH THETAS, SP360 4K, Z CAMS1, 360FLY 4K Pro, VIRB360, GiropticIO, Insta360 Air, Insta360 Nano, Insta360 Pro, ION360 U, LG 360 CAM(R105), MOTO 360 Camera, and Nokia Ozo. Facebook's Facebook 360 also operates on virtual reality (VR) equipment manufactured by Oculus VR and Samsung. Defendant induces infringement of the '131 Patent to both Oculus VR and Samsung. A listing of the VR equipment includes: Samsung Gear VR, Oculus Rift CV1, Oculus Rift S, Oculus Go, Oculus Quest, and Oculus Medium.

40. **Contributory Infringement.** Defendant actively, knowingly, and intentionally has been and continues materially contribute to their own user' infringement of the '131Patent, literally or by the doctrine of equivalence, by offering products or services to their users for use in end-user products in a manner that infringes one or more claims of the '131 Patent. Facebook contributes to users committing patent infringement by providing on its website page 'facebook360.fb.com/learn/' a list of 14 different 360 Cameras and VR equipment that can be used with Facebook's product and service *Facebook 360* (see above).

41. **Exhibit 2** presents *Facebook 360* practicing the technology claimed by the '131 Patent. Accordingly, *Facebook 360* being incorporated in the claim chart satisfies all elements of the Exemplary '131 Patent Claims.

42. Gabara therefore incorporates by reference in its allegations herein the claim chart of **Exhibit 2**.

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[6] https://facebook360.fb.com/learn/

43. Gabara is entitled to recover damages adequate to compensate for Defendant's infringement.

JURY DEMAND

44. Under Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff respectfully requests a trial by jury on all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Gabara respectfully requests the following relief:

A. an entry of judgment holding that Facebook infringed, is infringing, induced, and is inducing infringement of the Patent-in-Suit;

B. a preliminary and permanent injunction against Facebook and its officers, employees, agents, servants, attorneys, subsidiaries, affiliates, divisions, directors, from infringing and inducing infringement of the Patent-in-Suit, and for all further and proper injunctive relief pursuant to 35 U.S.C. § 283;

C. an award to Gabara of such past damages, not less than a reasonable royalty, as it shall prove at trial against Facebook that is adequate to fully compensate Gabara for Facebook's infringement of the Patent-in-Suit;

D. a determination that Facebook's infringement has been willful, wanton, and deliberate and that the damages against it be increased up to treble on this basis or for any other basis in accordance with the law;

E. a finding that this case is "exceptional" and an award to Gabara of its costs and reasonable attorneys' fees, as provided by 35 U.S.C. § 285;

F. an accounting of all infringing sales and revenues, together with post-judgment interest and pre-judgment interest from the first date of infringement of the Patent-in-Suit; and

G. such further and other relief as the Court may deem proper and just.

Dated: October 25, 2019

Respectfully submitted by:

Thaddeus Gabara

By: ____________________________

Thaddeus Gabara
P.O. Box 512
New Providence, NJ 07974

Exhibit 1

US008930131B2

(12) **United States Patent**
Gabara et al.

(10) **Patent No.: US 8,930,131 B2**
(45) **Date of Patent: Jan. 6, 2015**

(54) METHOD AND APPARATUS OF PHYSICALLY MOVING A PORTABLE UNIT TO VIEW AN IMAGE OF A STATIONARY MAP

(71) Applicant: **TrackThings LLC**, Murray Hill, NJ (US)

(72) Inventors: **Asher Thomas Gabara**, Murray Hill, NJ (US); **Constance Marie Gabara**, Murray Hill, NJ (US); **Thaddeus John Gabara**, Murray Hill, NJ (US)

(73) Assignee: **TrackThings LLC**, Murray Hill, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/257,349**

(22) Filed: **Apr. 21, 2014**

(65) **Prior Publication Data**

US 2014/0229104 A1 Aug. 14, 2014

Related U.S. Application Data

(63) Continuation of application No. 14/097,386, filed on Dec. 5, 2013, now Pat. No. 8,706,400, which is a continuation of application No. 13/967,299, filed on Aug. 14, 2013, now Pat. No. 8,620,545, which is a continuation of application No. 13/337,251, filed on Dec. 26, 2011, now Pat. No. 8,532,919.

(51) **Int. Cl.**

G06T 15/00	(2011.01)
G01C 21/36	(2006.01)
G09B 29/00	(2006.01)
G09B 29/10	(2006.01)
G09G 5/02	(2006.01)

(52) **U.S. Cl.**
CPC ***G06T 15/00*** (2013.01); ***G01C 21/367*** (2013.01); ***G09B 29/007*** (2013.01); ***G09B 29/10*** (2013.01); ***G09G 5/02*** (2013.01)
USPC **701/409**

(58) **Field of Classification Search**
USPC 701/409
See application file for complete search history.

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(Continued)

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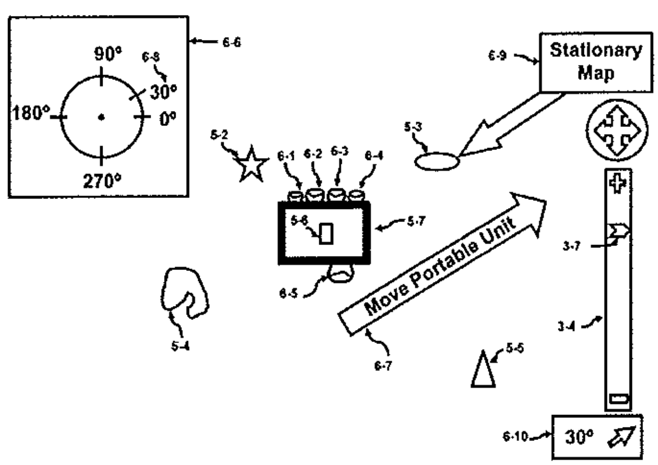
Brown, Leonard D. and Hong Hua. "Magic lenses for augmented virtual environments." Computer Graphics and Applications, IEEE 26.4 (2006): 64-73.

Primary Examiner — Thomas Tarcza
Assistant Examiner — Alex C Dunn
(74) *Attorney, Agent, or Firm* — Thaddeus Gabara; Tyrean Patent Prosecution Law Firm

(57) **ABSTRACT**

A portable unit is moved along at least one of the orientations of a vector. As the user moves the unit, images of the background map appear on the screen of the portable device. The user scans the stationary map presented on the screen of the portable unit. This has several benefits since now relative distances and angular displacements between objects that are outside of the range of the screen of the handheld unit can be immediately be located and placed into view on the screen of a portable unit. The handheld unit is like a Sliding Window which provides a view of this image of a stationary map lying in the background of the portable unit.

21 Claims, 40 Drawing Sheets



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2006/0117269	A1	6/2006	Lai et al.	
2006/0274269	A1	12/2006	Koest	
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2009/0043814	A1	2/2009	Faris et al.	
2009/0265611	A1	10/2009	Sengamedu et al.	
2009/0305682	A1	12/2009	Spalink	
2010/0299615	A1	11/2010	Miluzzo et al.	
2011/0060998	A1	3/2011	Schwartz et al.	
2012/0122574	A1 *	5/2012	Fitzpatrick et al.	463/31
2012/0192107	A1	7/2012	Kwon	
2013/0036347	A1	2/2013	Eftekhari et al.	

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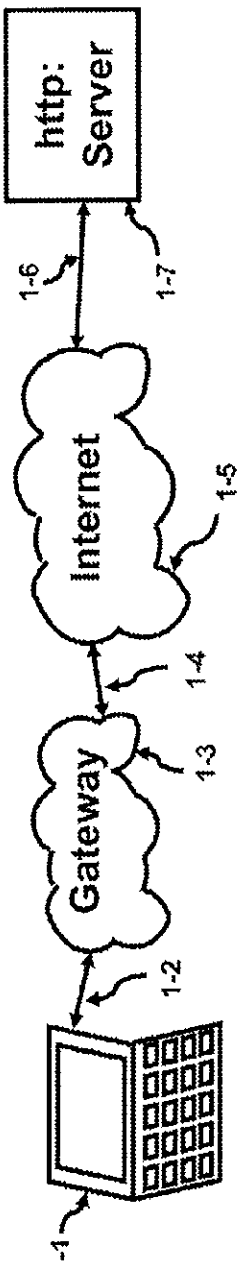


FIG. 1a (prior art)

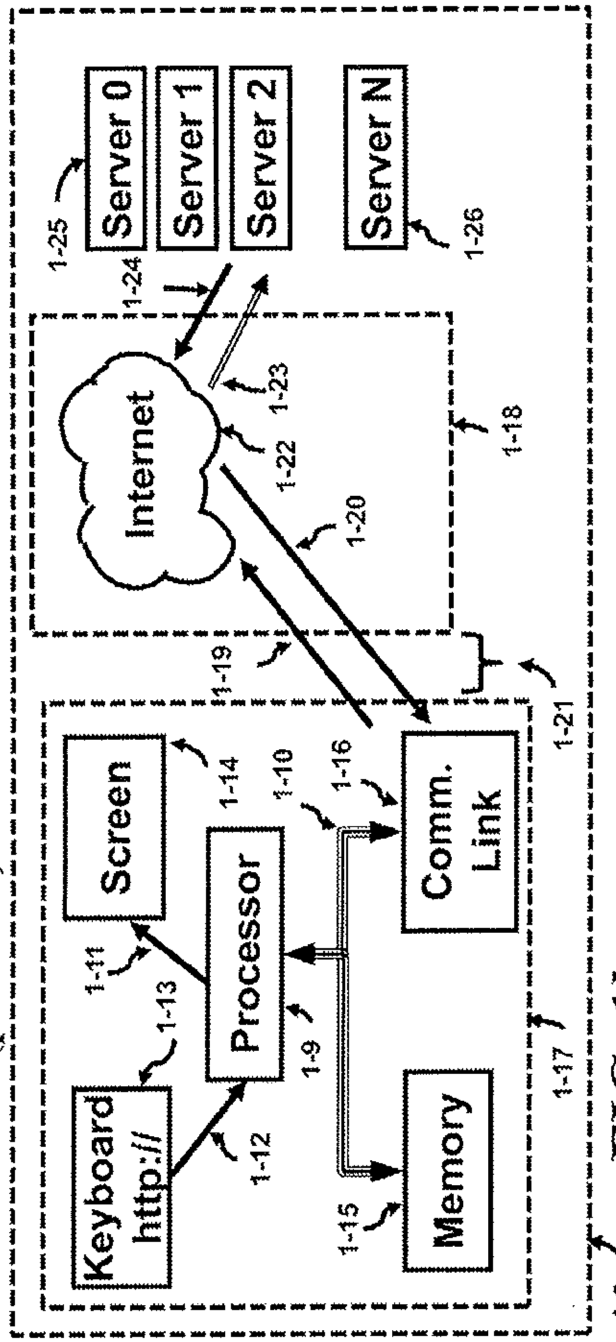


FIG. 1b (prior art)

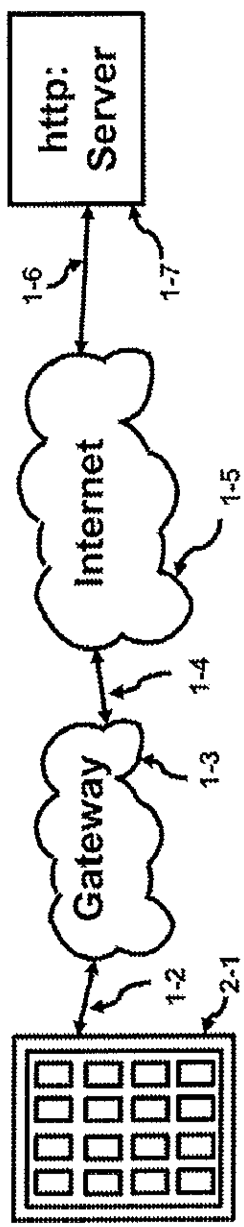


FIG. 2a (prior art)

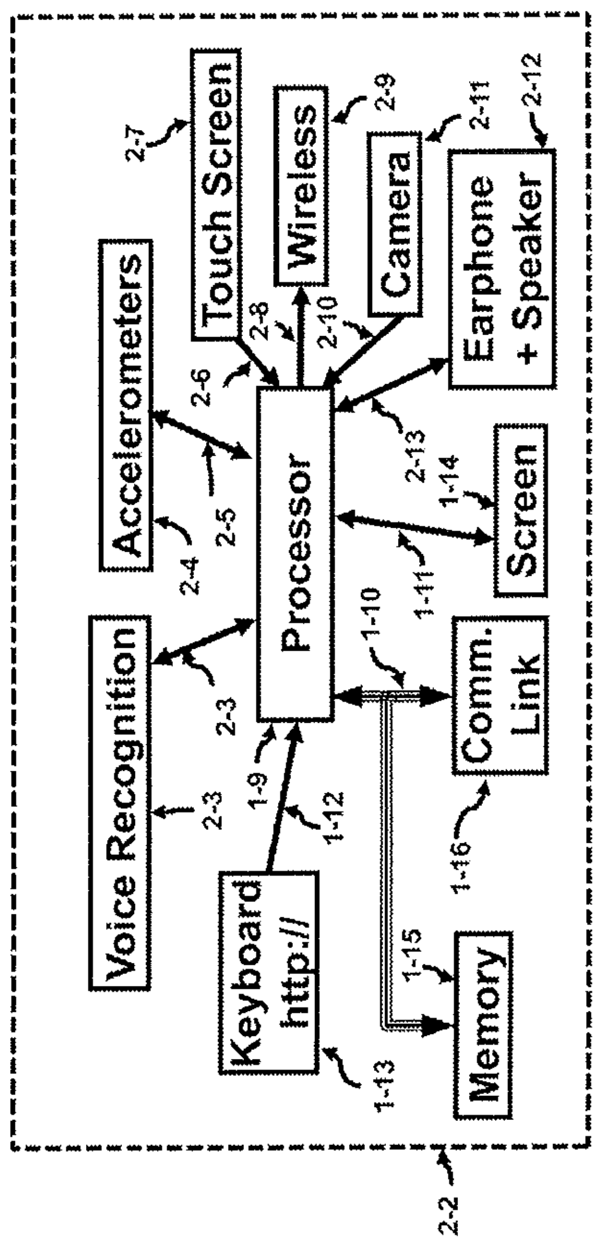


FIG. 2b (prior art)

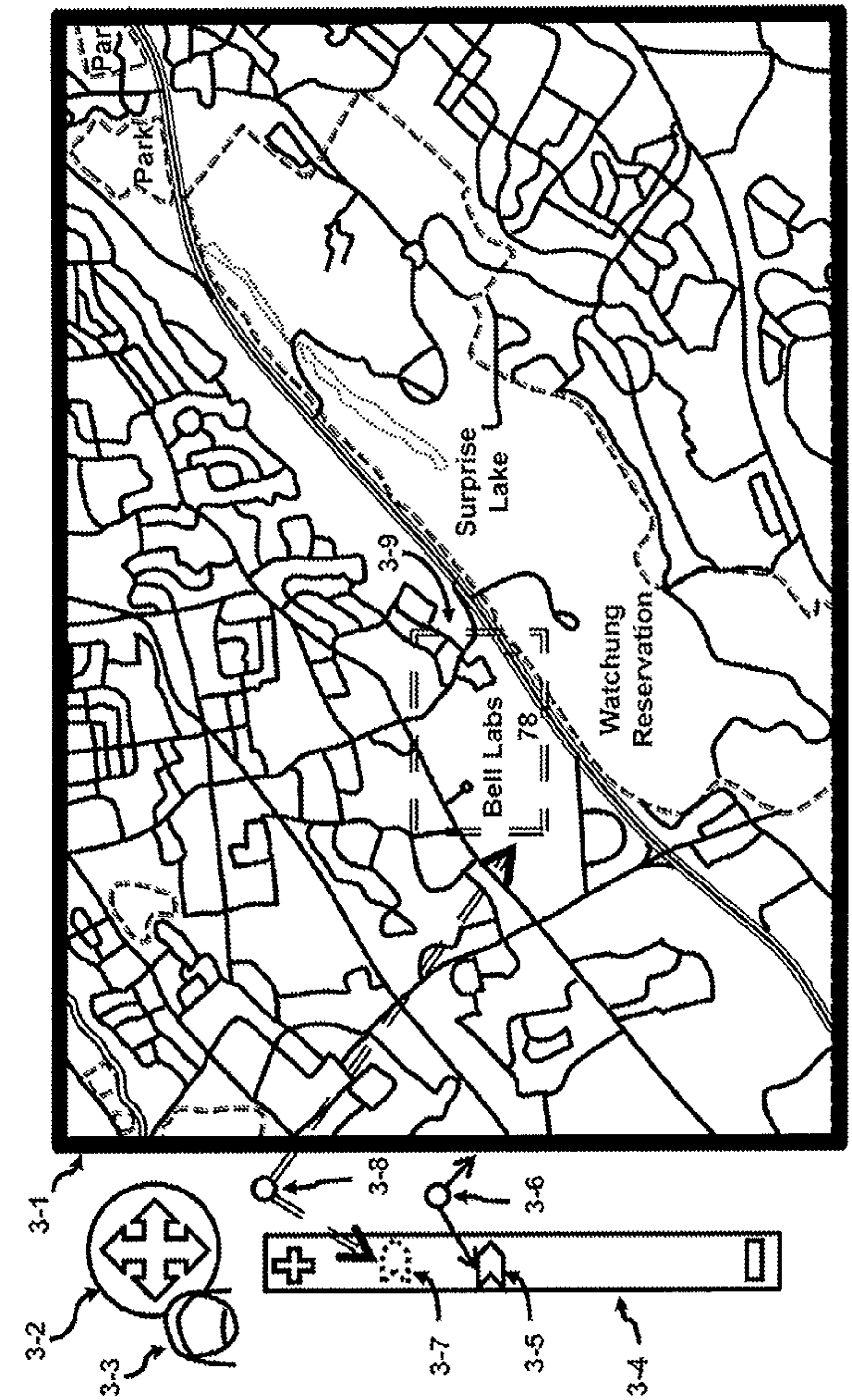

Park
Surprise Lake
Watchung Reservation
Bell Labs
78
3-1
3-2
3-3
3-4
3-5
3-6
3-7
3-8
3-9

FIG. 3a

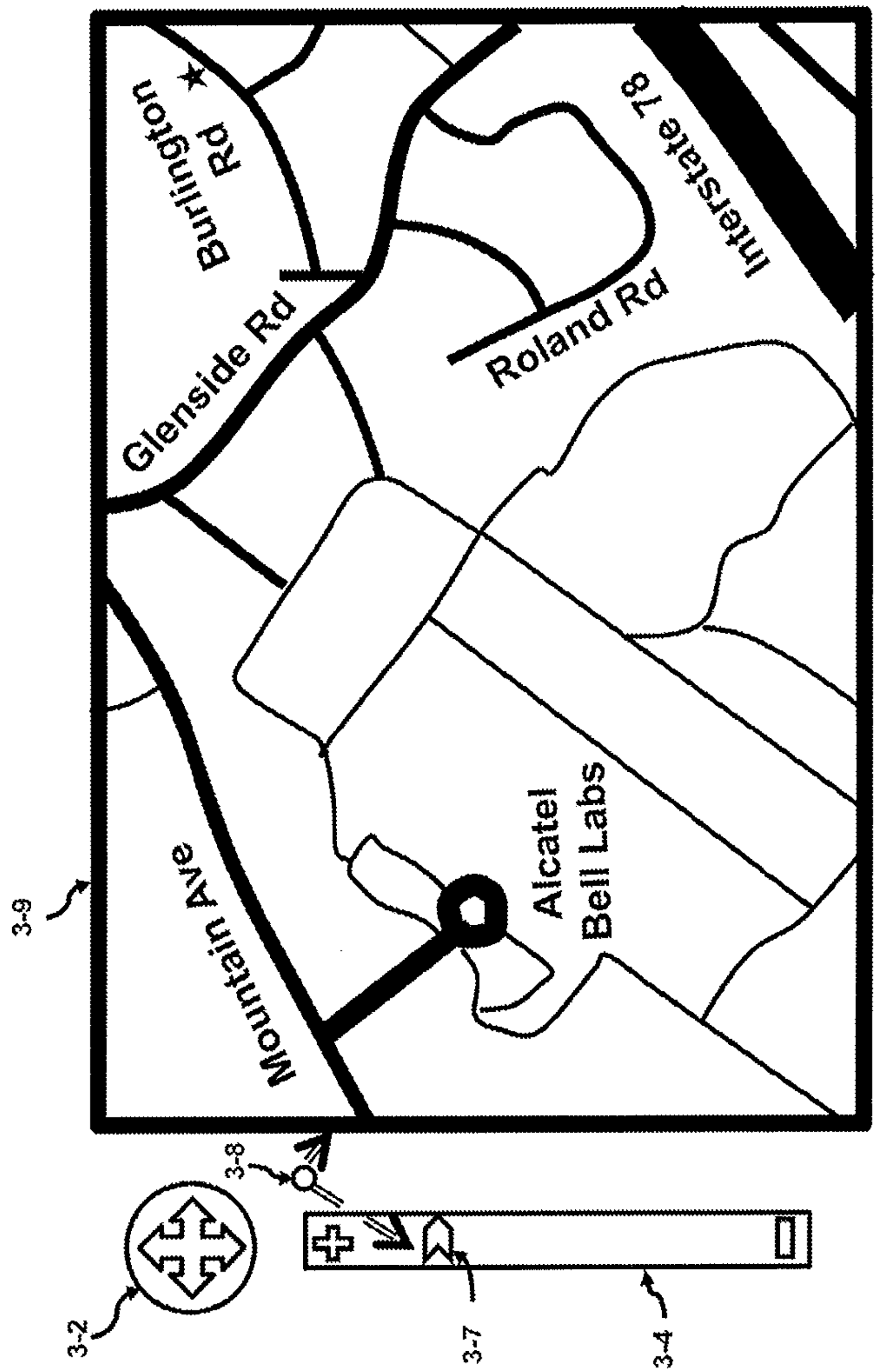
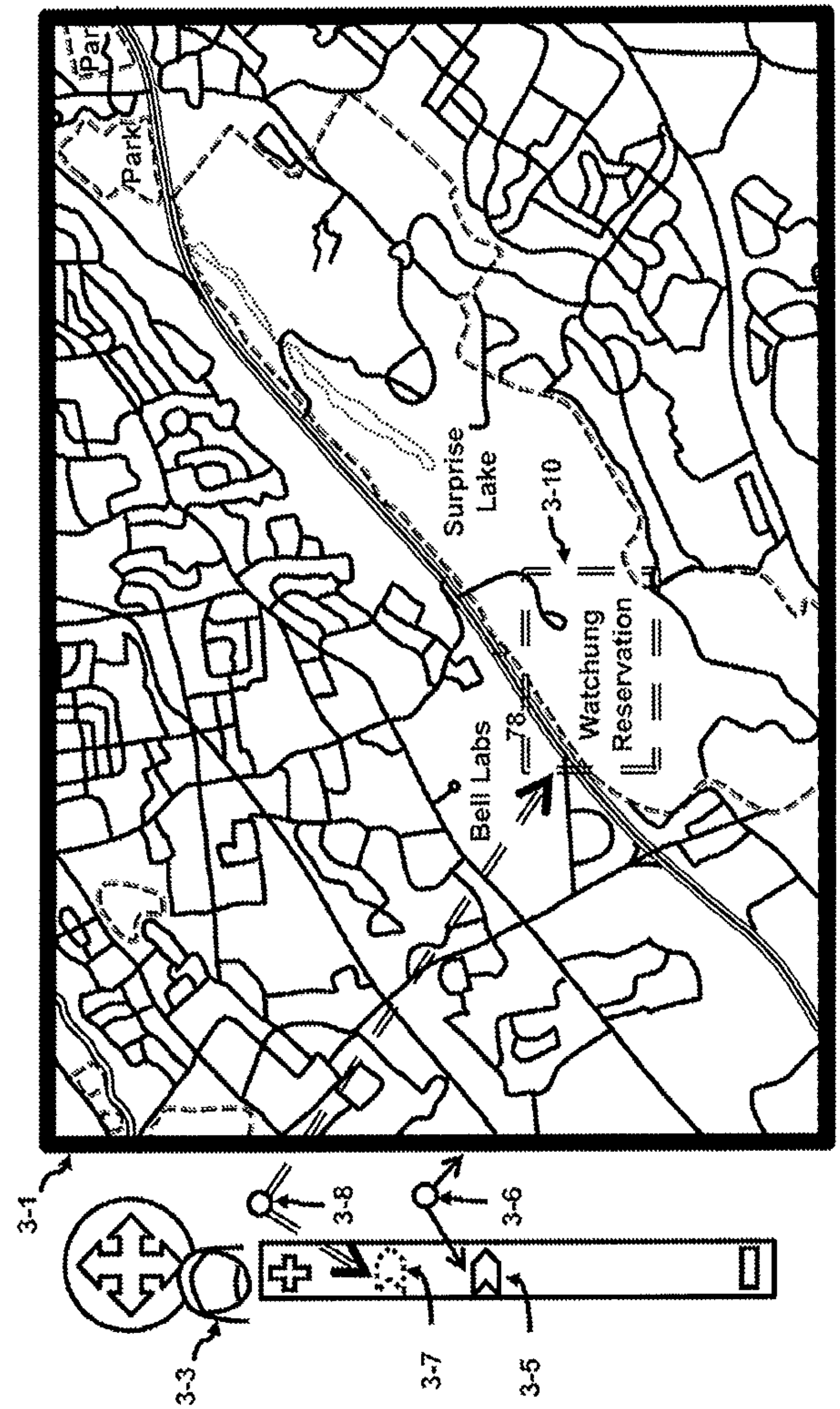

Burlington Rd
Glenside Rd
Roland Rd
Interstate 78
Mountain Ave
Alcatel Bell Labs
3-9
3-8
3-2
3-7
3-4

FIG. 3b



Park
Surprise Lake
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Watchung Reservation
Bell Labs
78
3-1
3-8
3-6
3-3
3-7
3-5

FIG. 3c

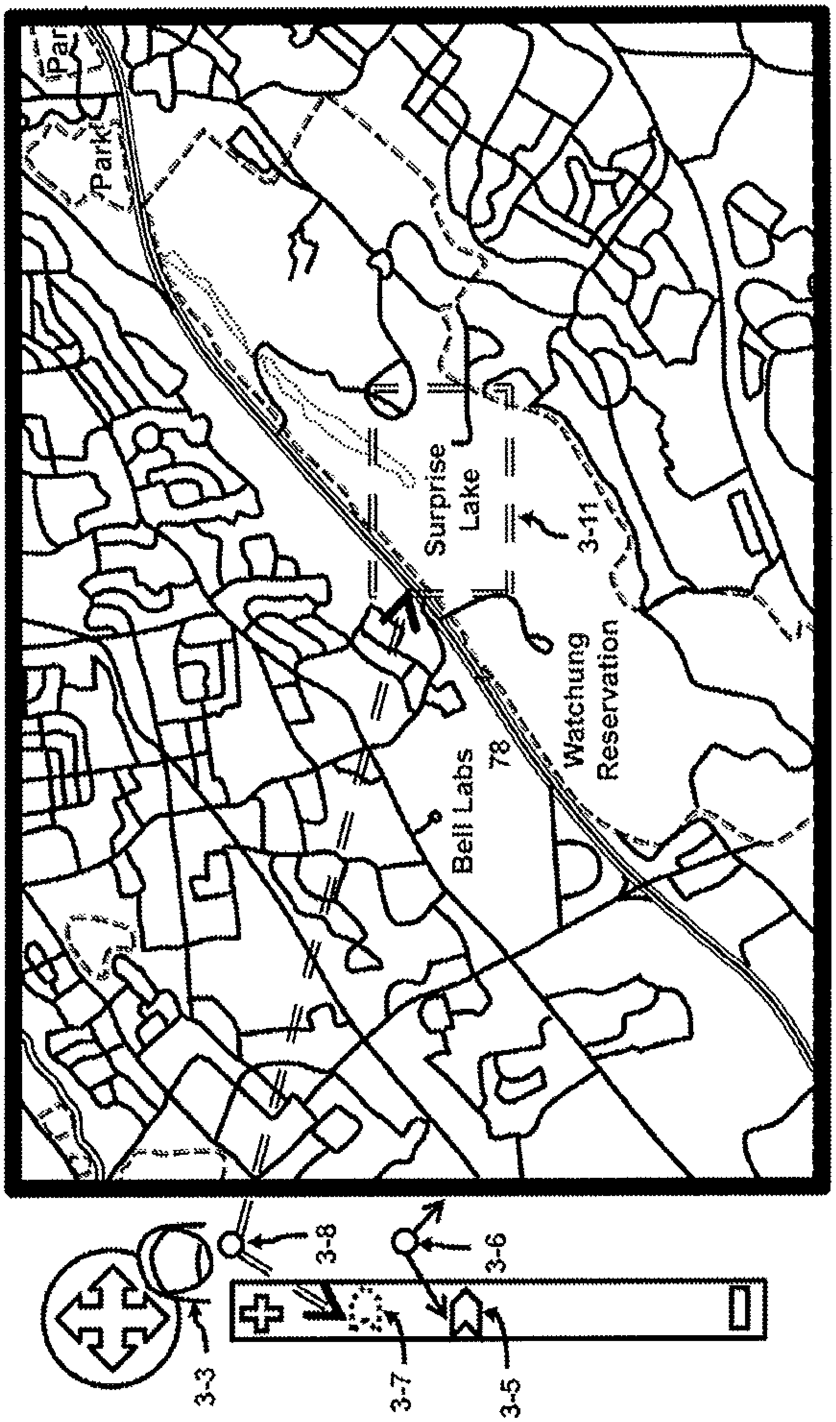

Park
Surprise Lake
3-11
Watchung Reservation
Bell Labs
78
3-8
3-6
3-3
3-7
3-5

FIG. 3d

FIG. 4a

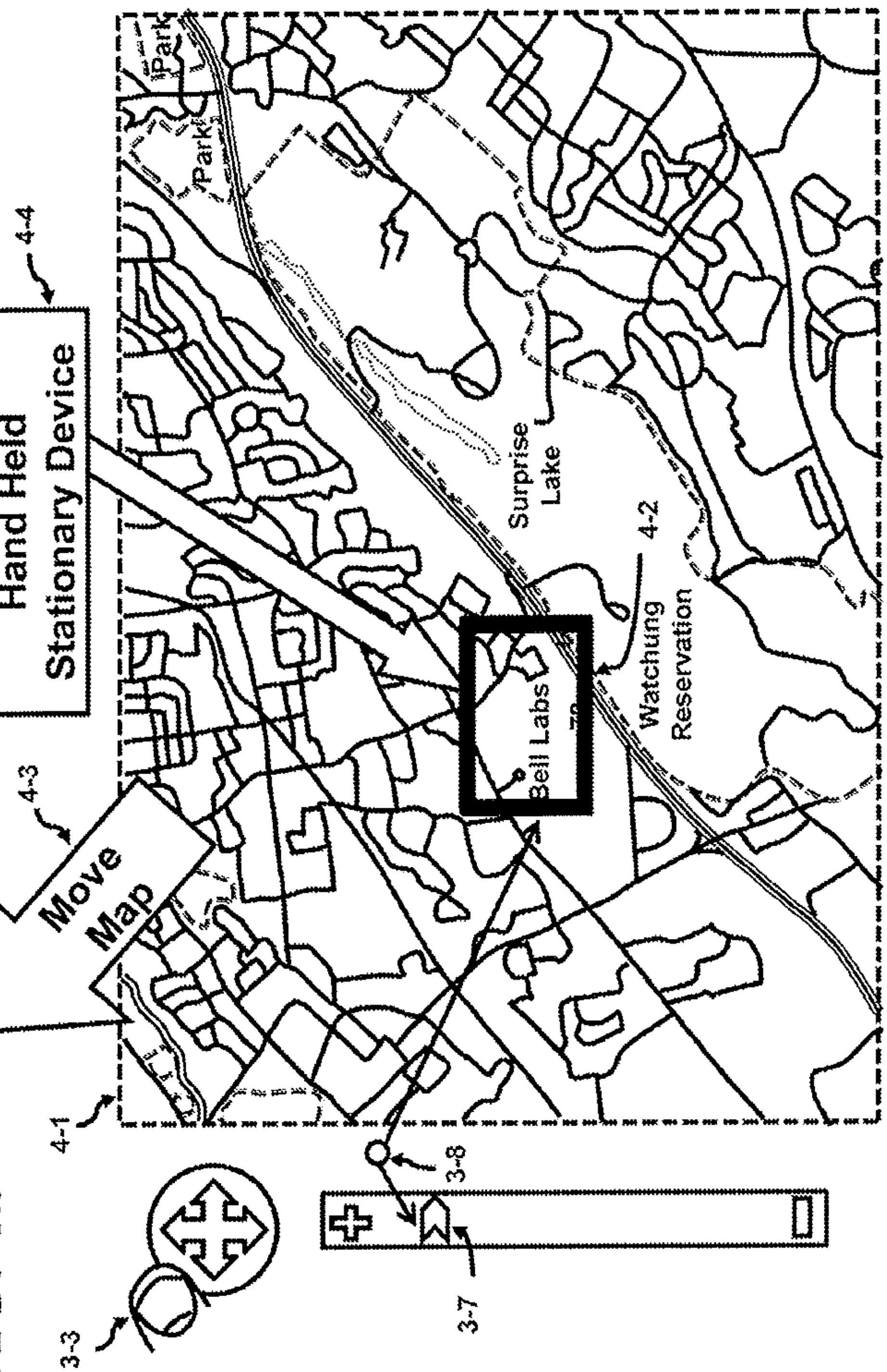
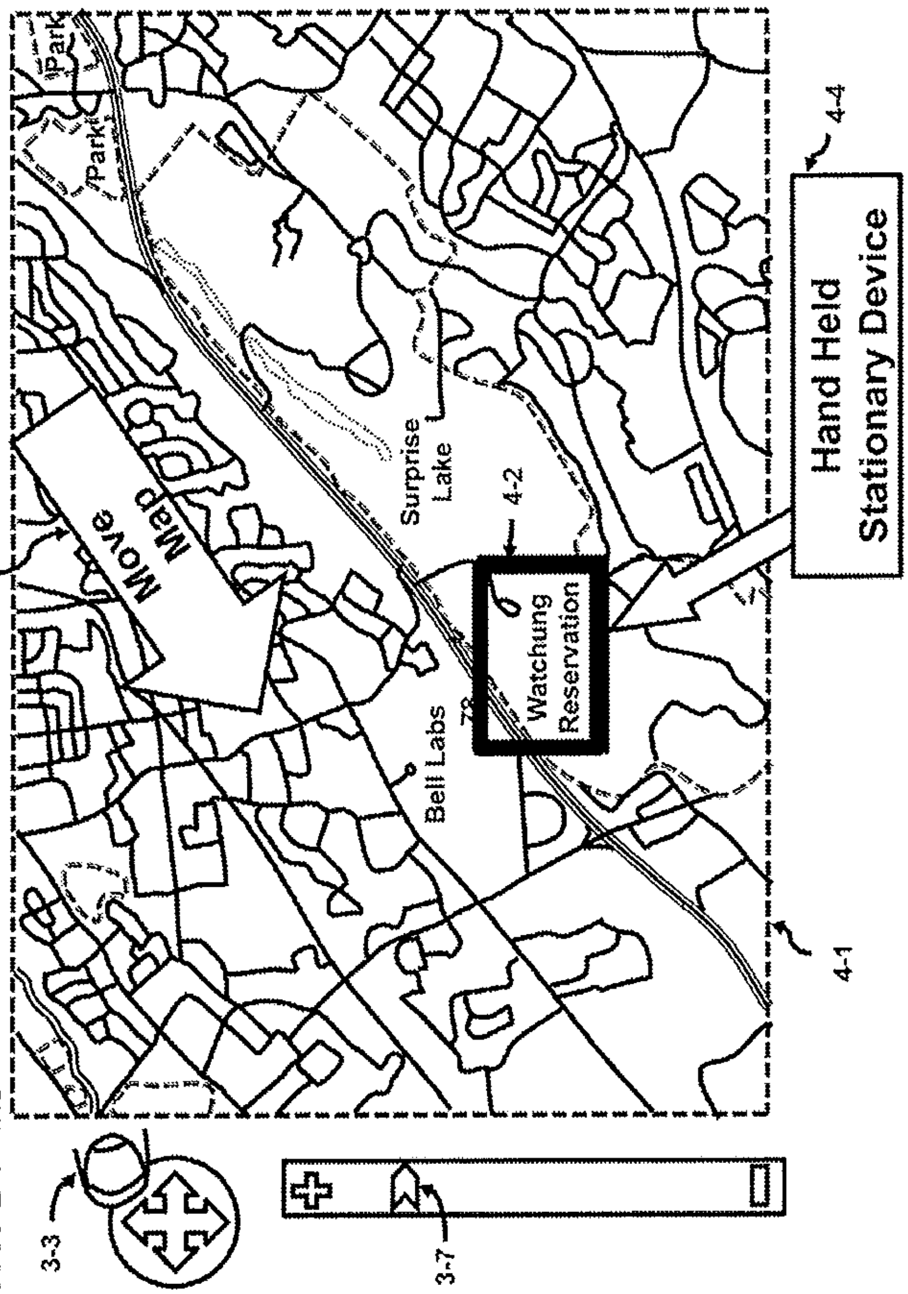

Park
Park
Hand Held
Stationary Device
4-4
4-3
Move
Map
Surprise
Lake
4-2
Watchung
Reservation
Bell Labs
4-1
3-8
3-7
3-3

FIG. 4b


Park
Park
Surprise Lake
Bell Labs
78
Watchung Reservation
Move Map
Hand Held Stationary Device
4-1
4-2
4-4
4-5
3-3
3-7

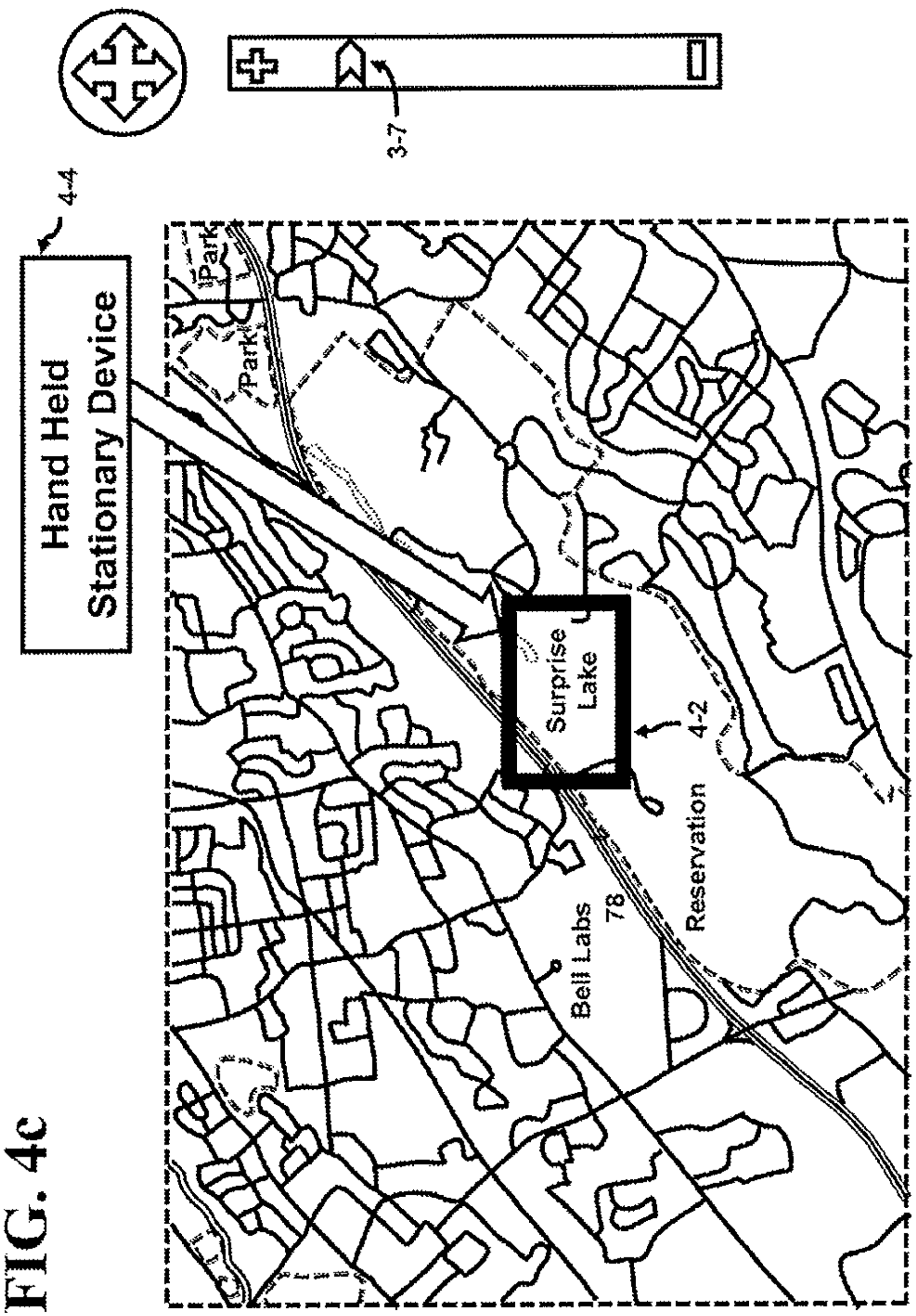

3-7
4-4
Hand Held
Stationary Device
Park
Park
Surprise
Lake
4-2
Bell Labs
78
Reservation

FIG. 4c

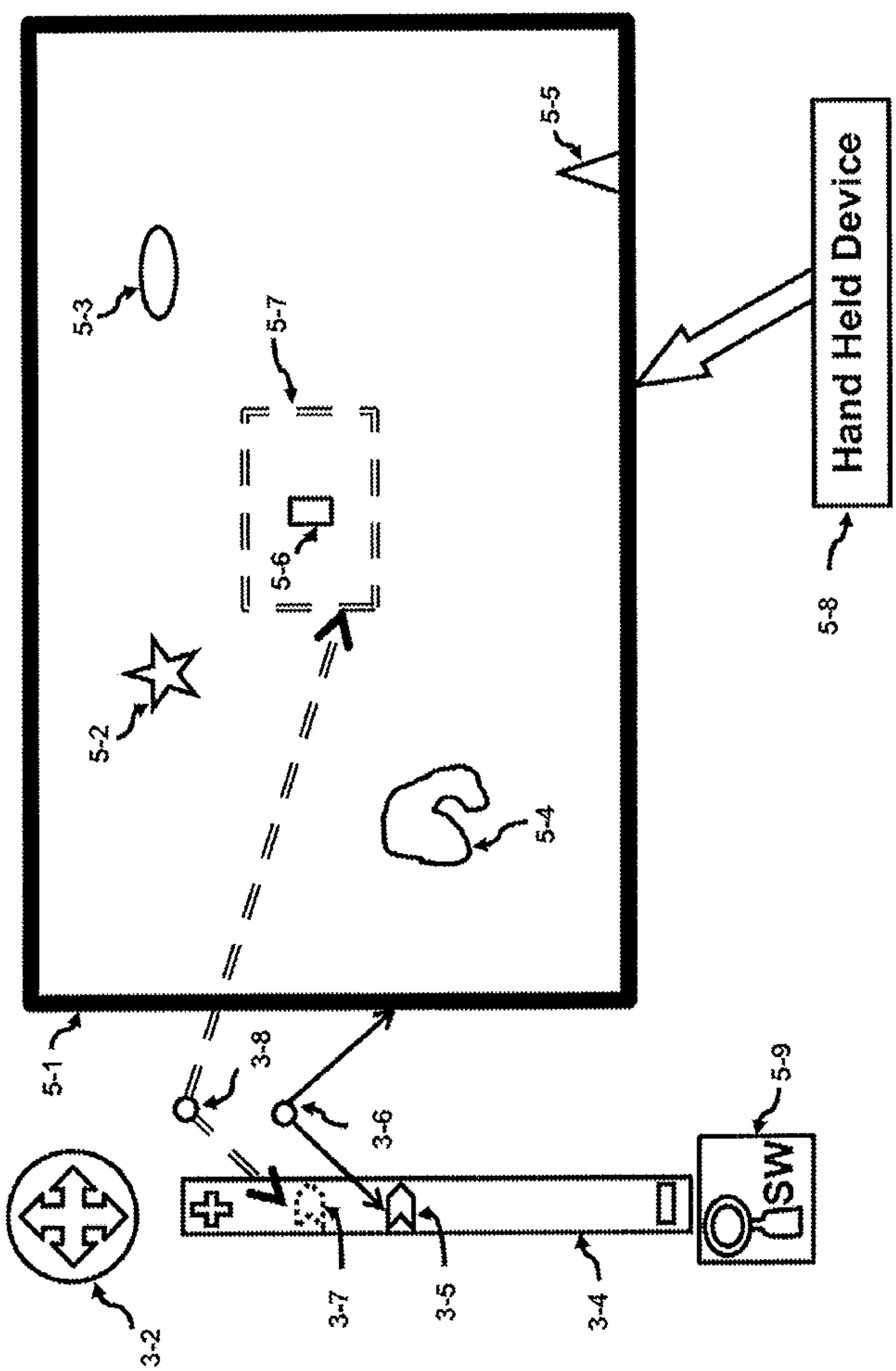


FIG. 5a

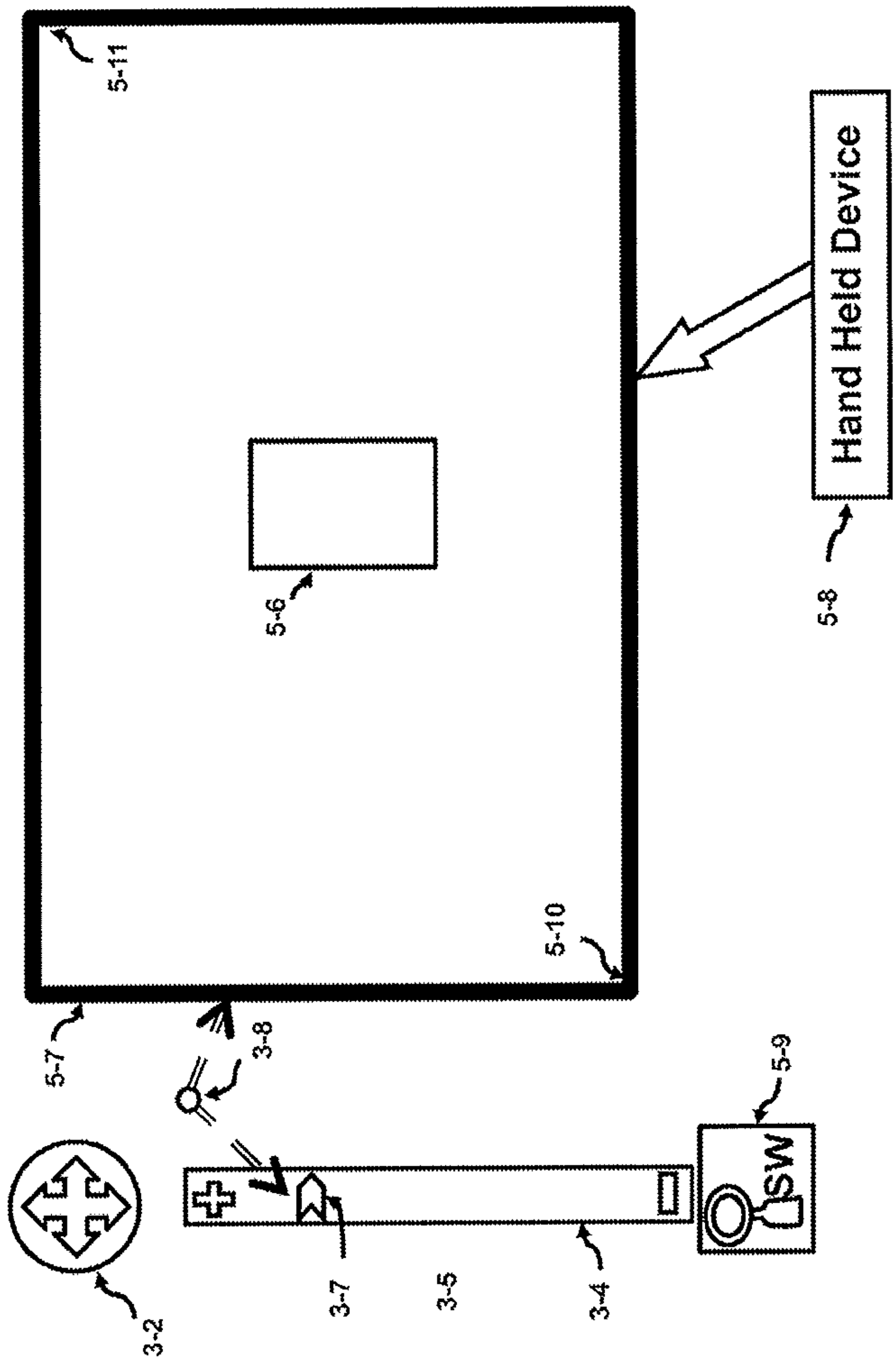
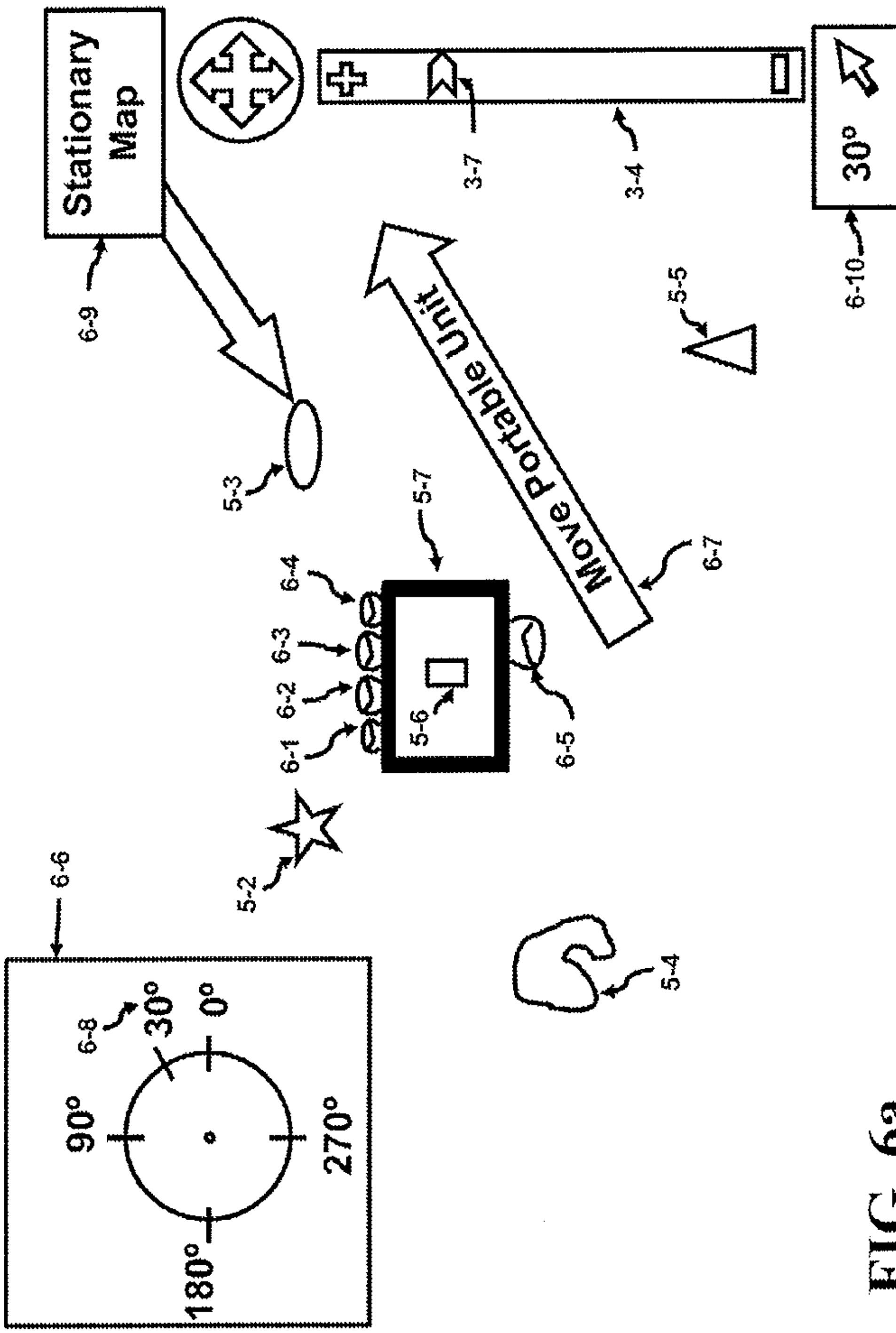
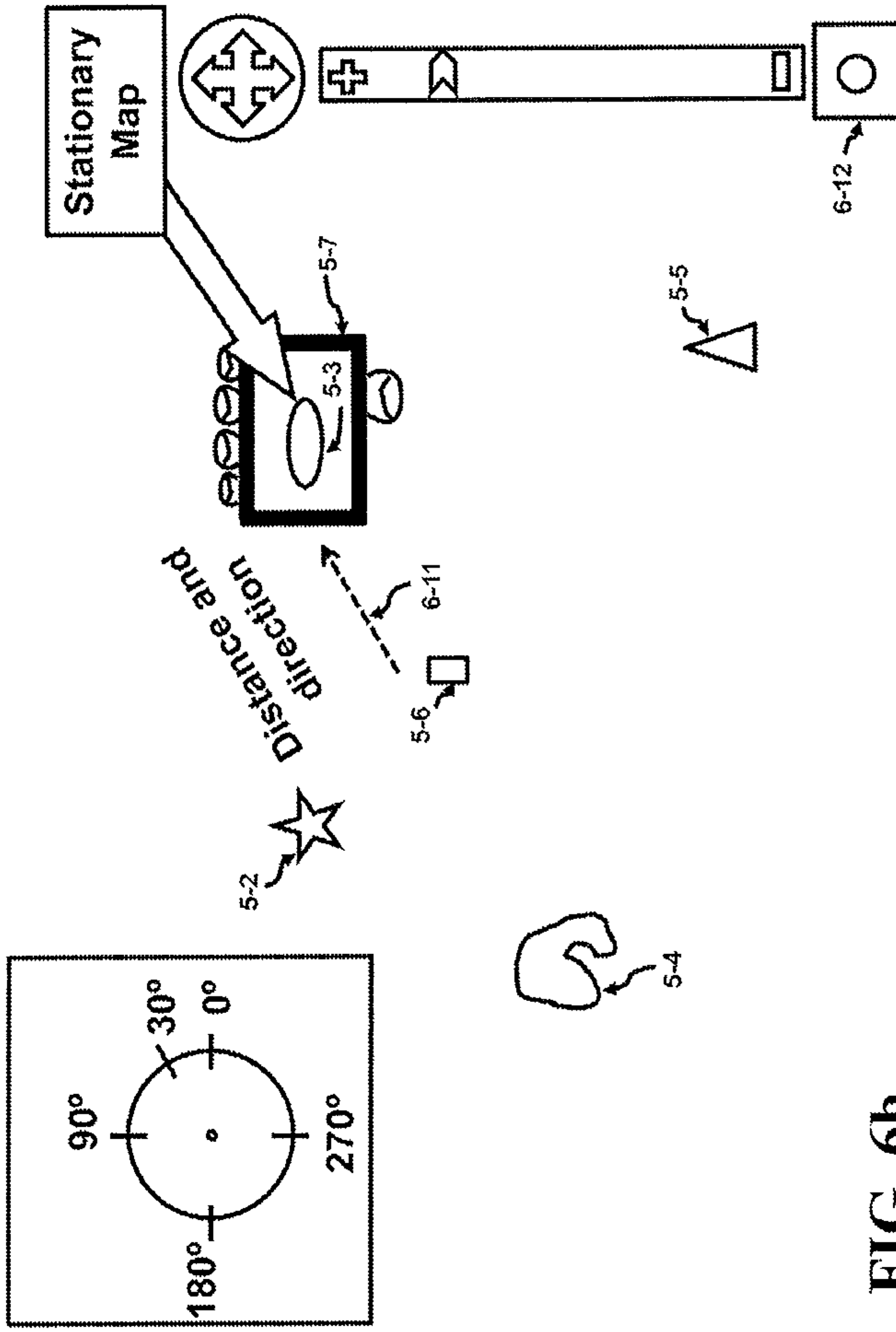


FIG. 5b



Stationary Map
6-9
3-7
3-4
30°
6-10
Move Portable Unit
6-7
5-5
5-3
5-7
6-4
6-3
6-2
6-1
5-6
6-5
5-2
6-6
6-8
90°
30°
0°
270°
180°
5-4

FIG. 6a



Stationary Map
5-7
5-3
5-5
6-12
Distance and direction
6-11
5-6
5-2
5-4
90°
30°
0°
180°
270°

FIG. 6b

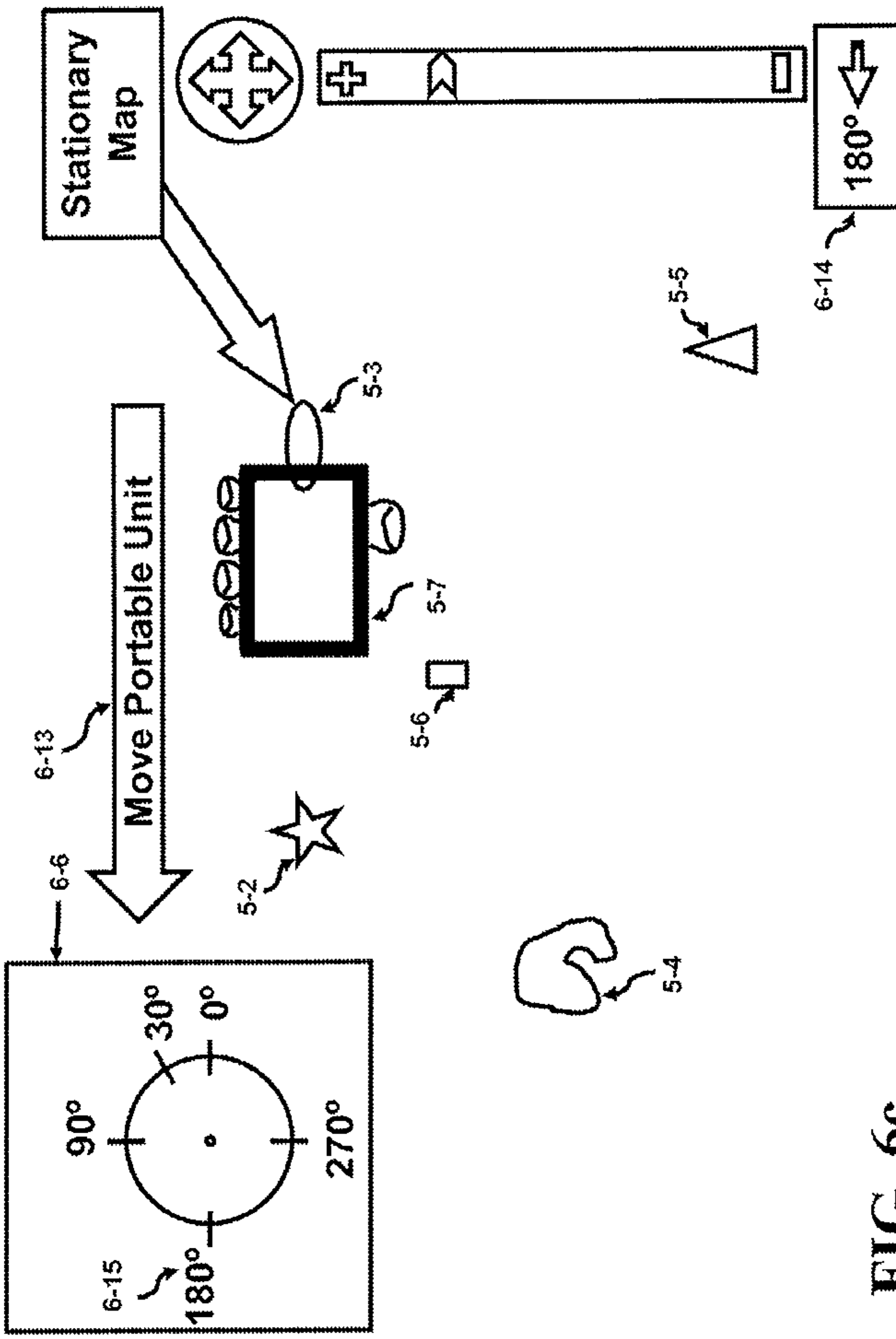

Stationary Map
180°
6-14
5-5
5-3
Move Portable Unit
6-13
5-7
5-6
6-6
5-2
5-4
90°
30°
0°
270°
180°
6-15

FIG. 6c

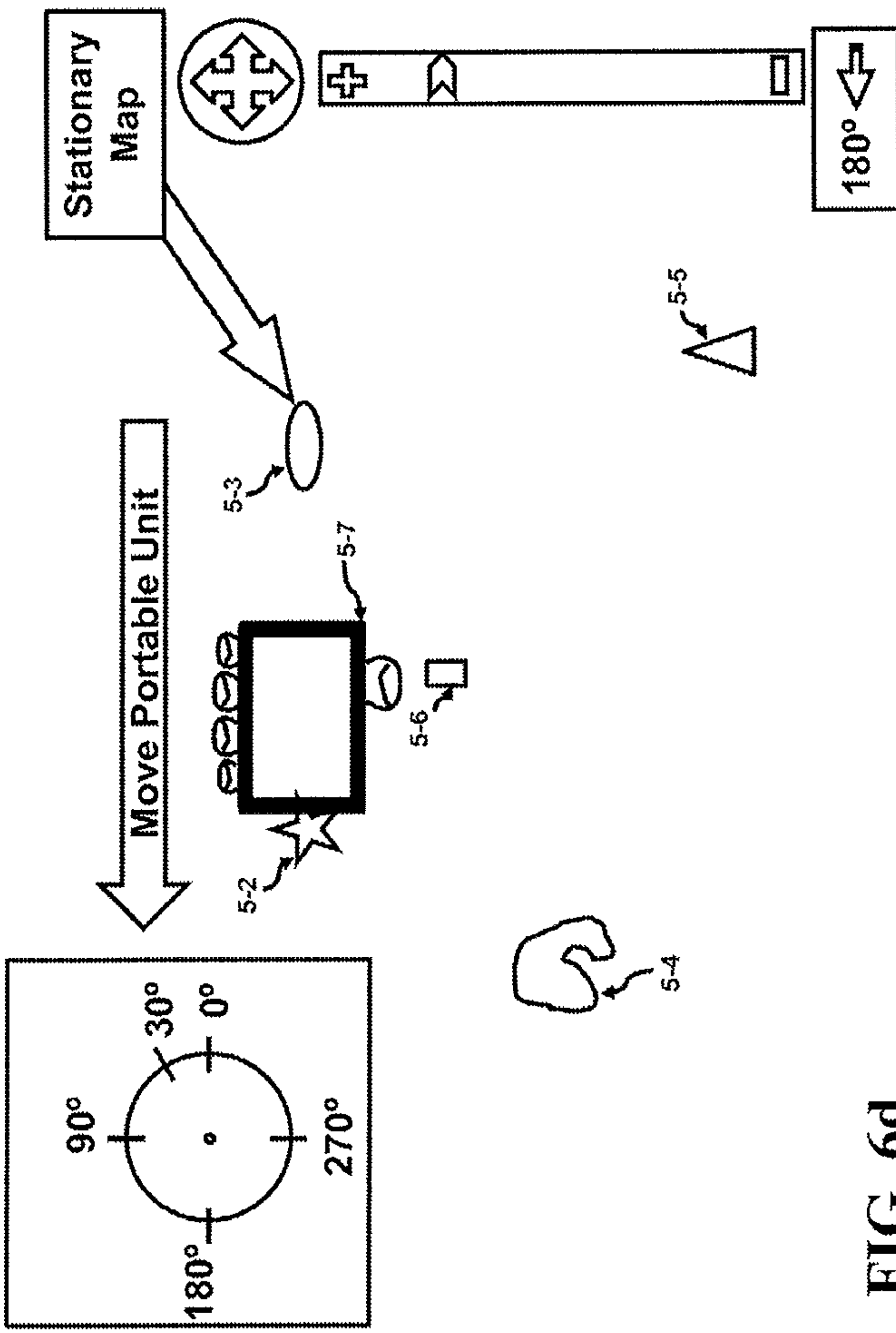

Stationary Map
180°
5-5
Move Portable Unit
5-3
5-7
5-6
5-2
5-4
90°
30°
0°
180°
270°

FIG. 6d

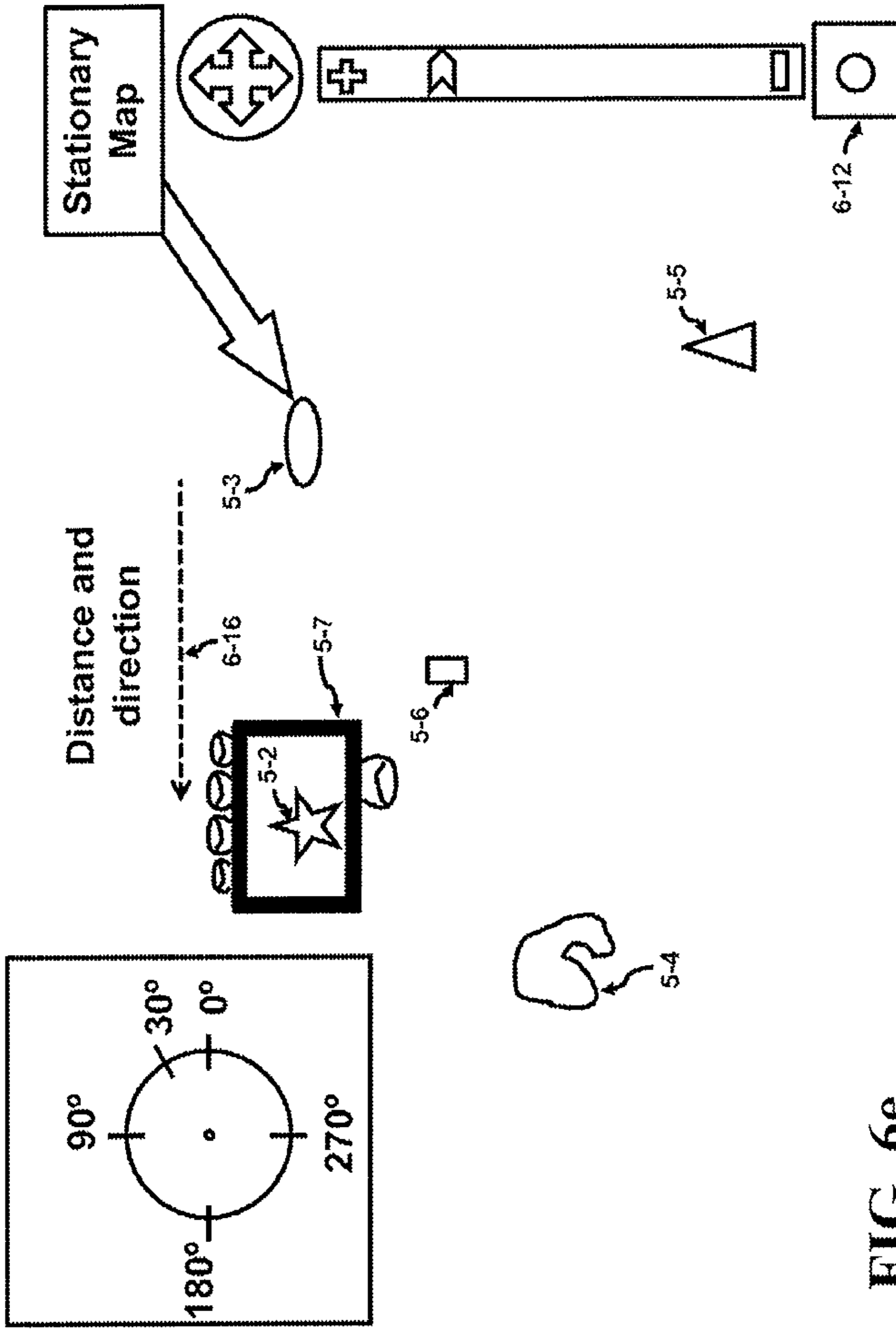
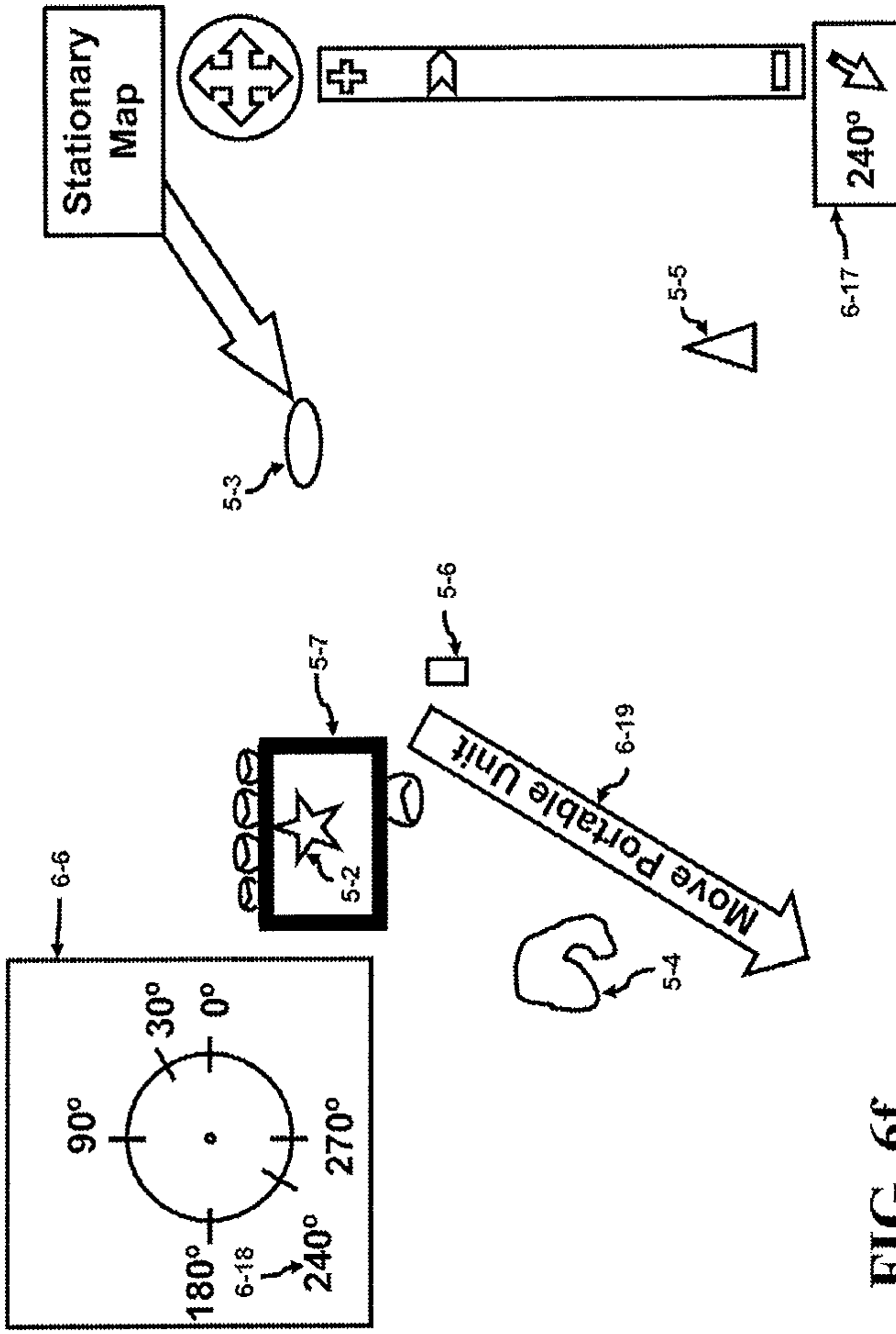
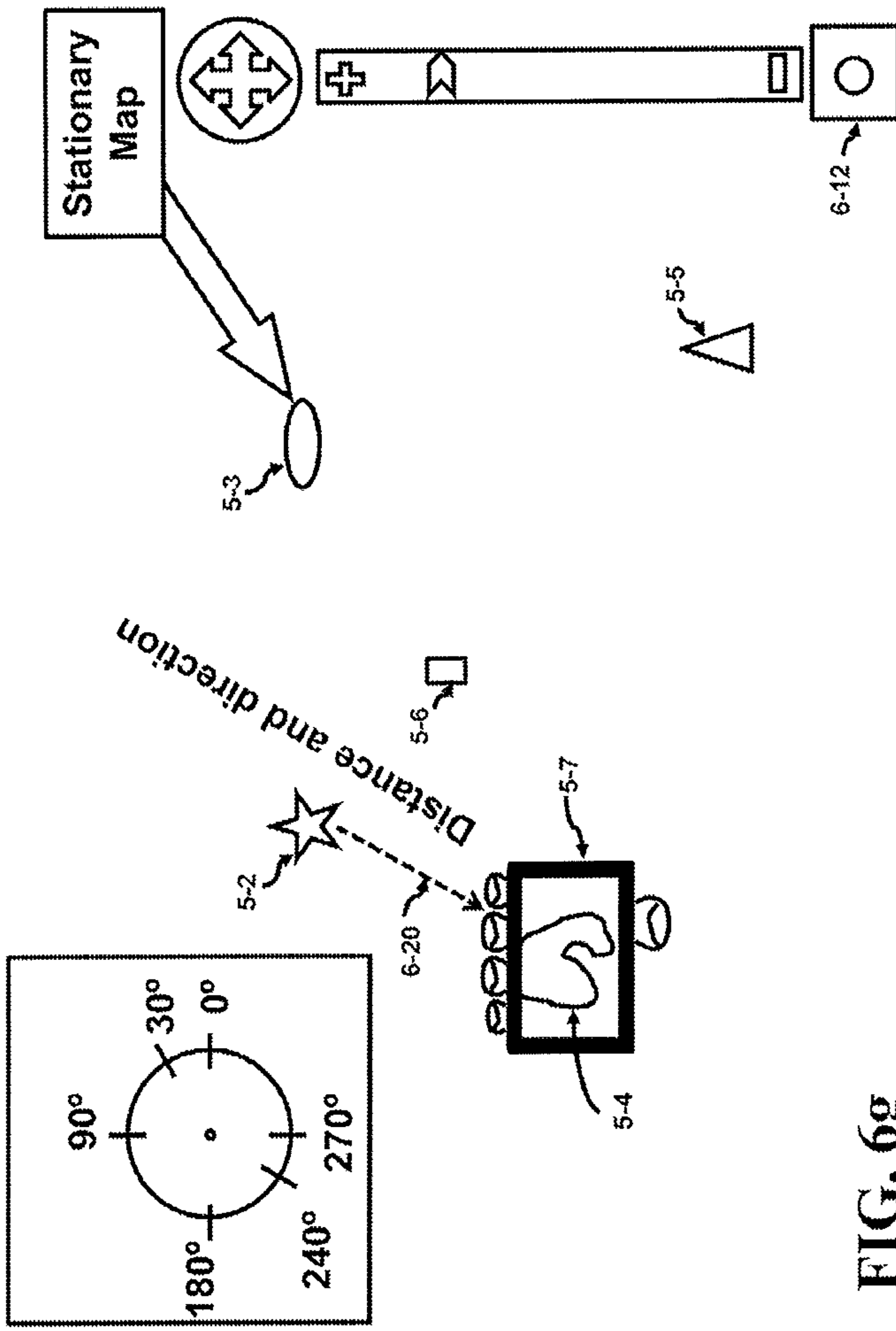

Stationary Map
6-12
5-5
5-3
Distance and direction
6-16
5-7
5-6
5-2
5-4
90°
30°
0°
270°
180°

FIG. 6e



Stationary Map
240°
6-17
5-5
5-3
5-6
5-7
6-19
Move Portable Unit
5-2
5-4
6-6
90°
30°
0°
270°
180°
240°
6-18

FIG. 6f



Stationary Map
6-12
5-5
5-3
5-6
Distance and direction
5-7
5-2
6-20
5-4
90°
30°
0°
180°
240°
270°

FIG. 6g

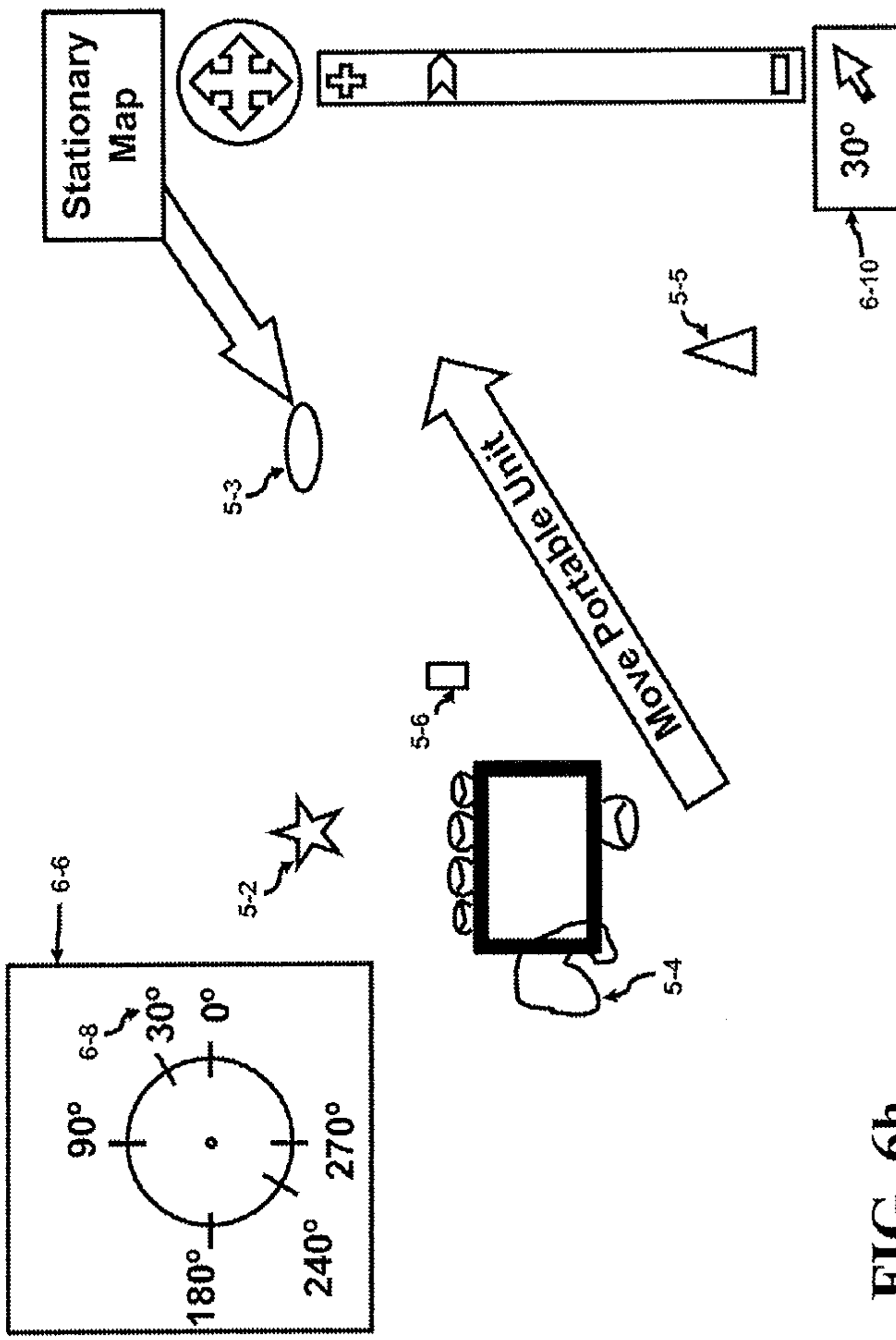

Stationary Map
30°
6-10
5-5
5-3
Move Portable Unit
5-6
5-2
5-4
6-6
90°
6-8
30°
0°
270°
180°
240°

FIG. 6h

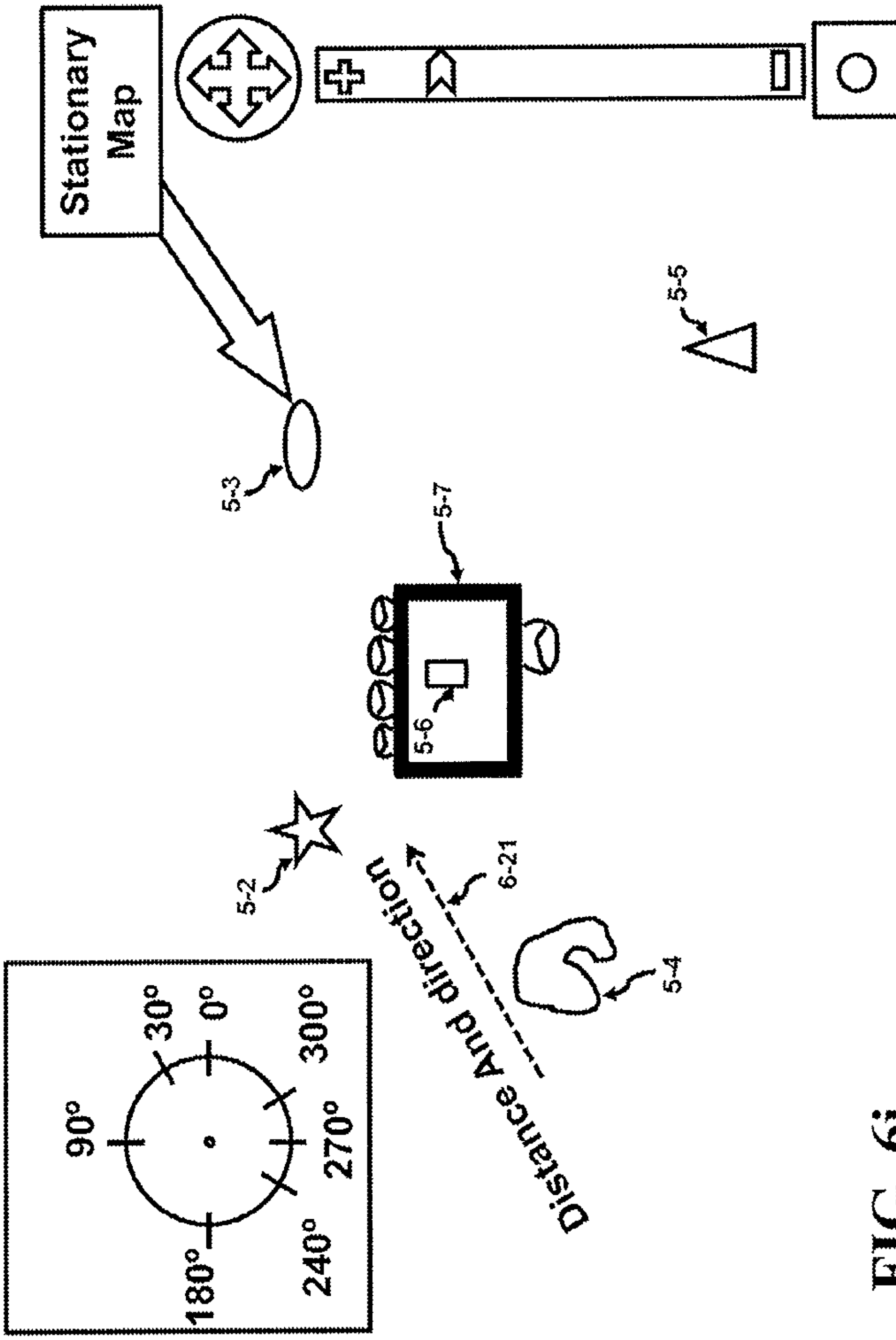

Stationary Map
5-5
5-3
5-7
5-6
5-2
6-21
Distance And direction
5-4
90°
30°
0°
300°
270°
240°
180°

FIG. 6i

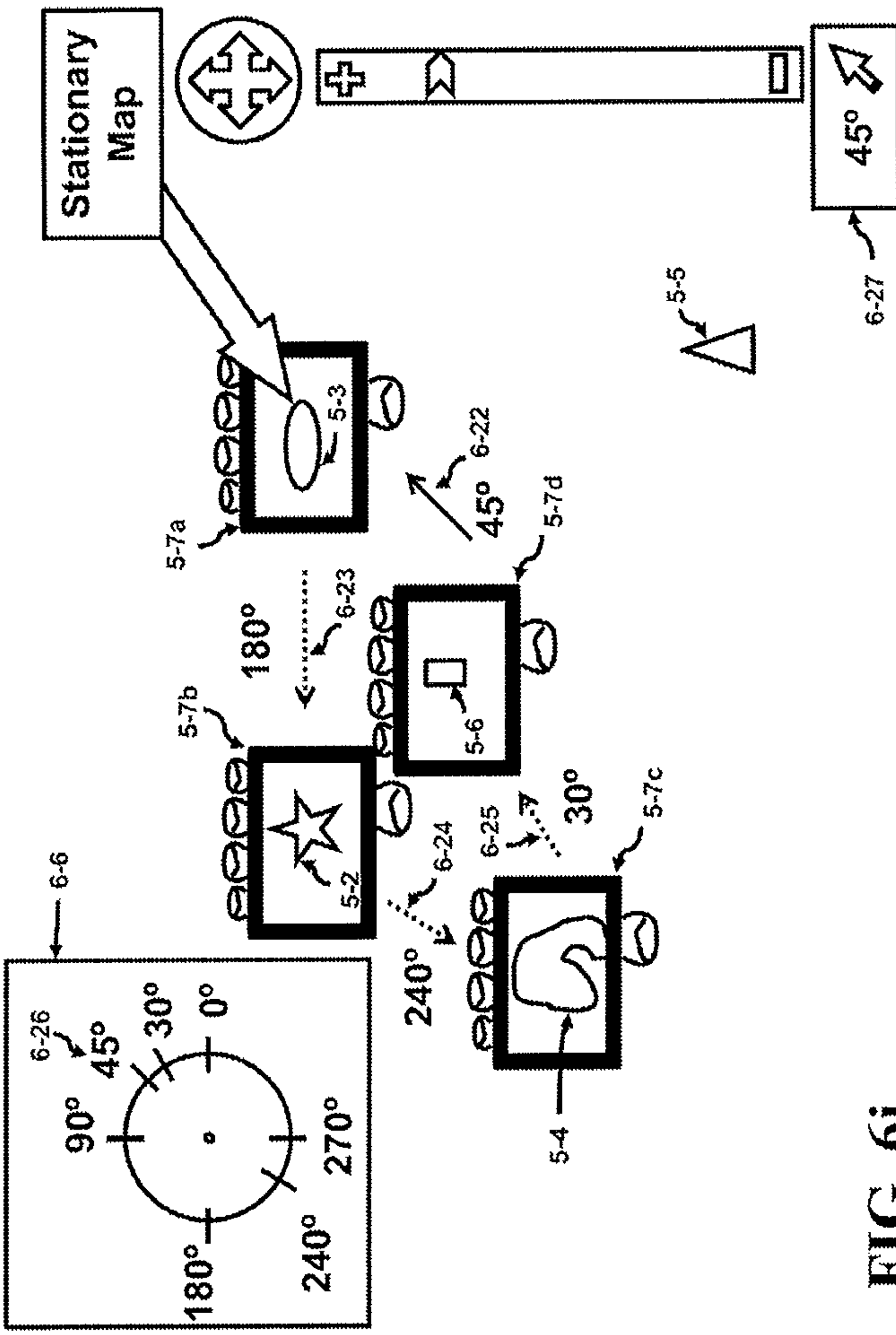

Stationary Map
45°
6-27
5-5
5-3
5-7a
6-22
45°
5-7d
6-23
180°
5-7b
5-6
30°
5-7c
6-25
6-24
5-2
240°
5-4
6-6
6-26
45°
30°
0°
90°
270°
180°
240°

FIG. 6j

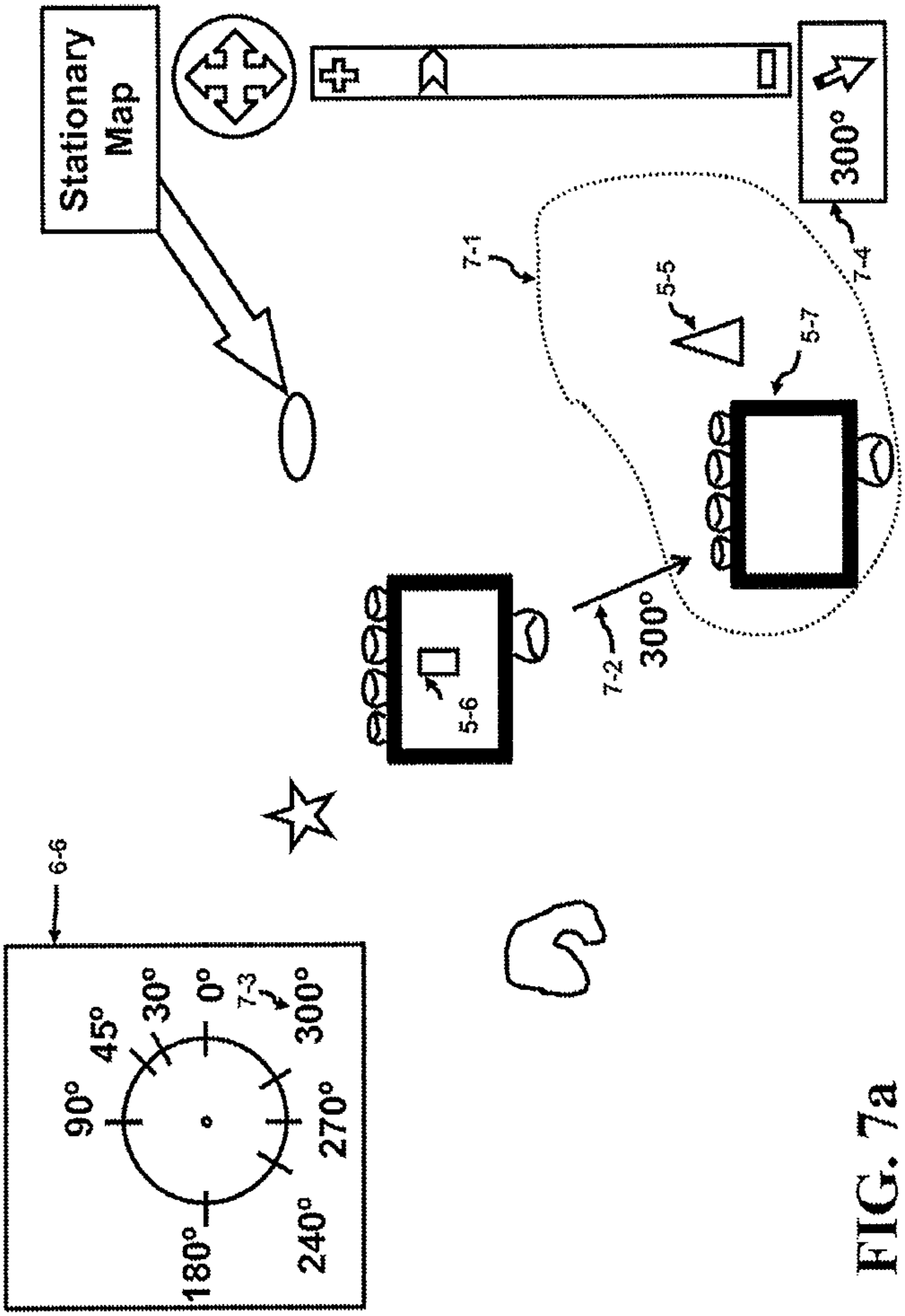

Stationary Map
300°
7-1
7-4
5-5
5-7
5-6
7-2
300°
6-6
90°
45°
30°
0°
7-3
300°
270°
180°
240°

FIG. 7a

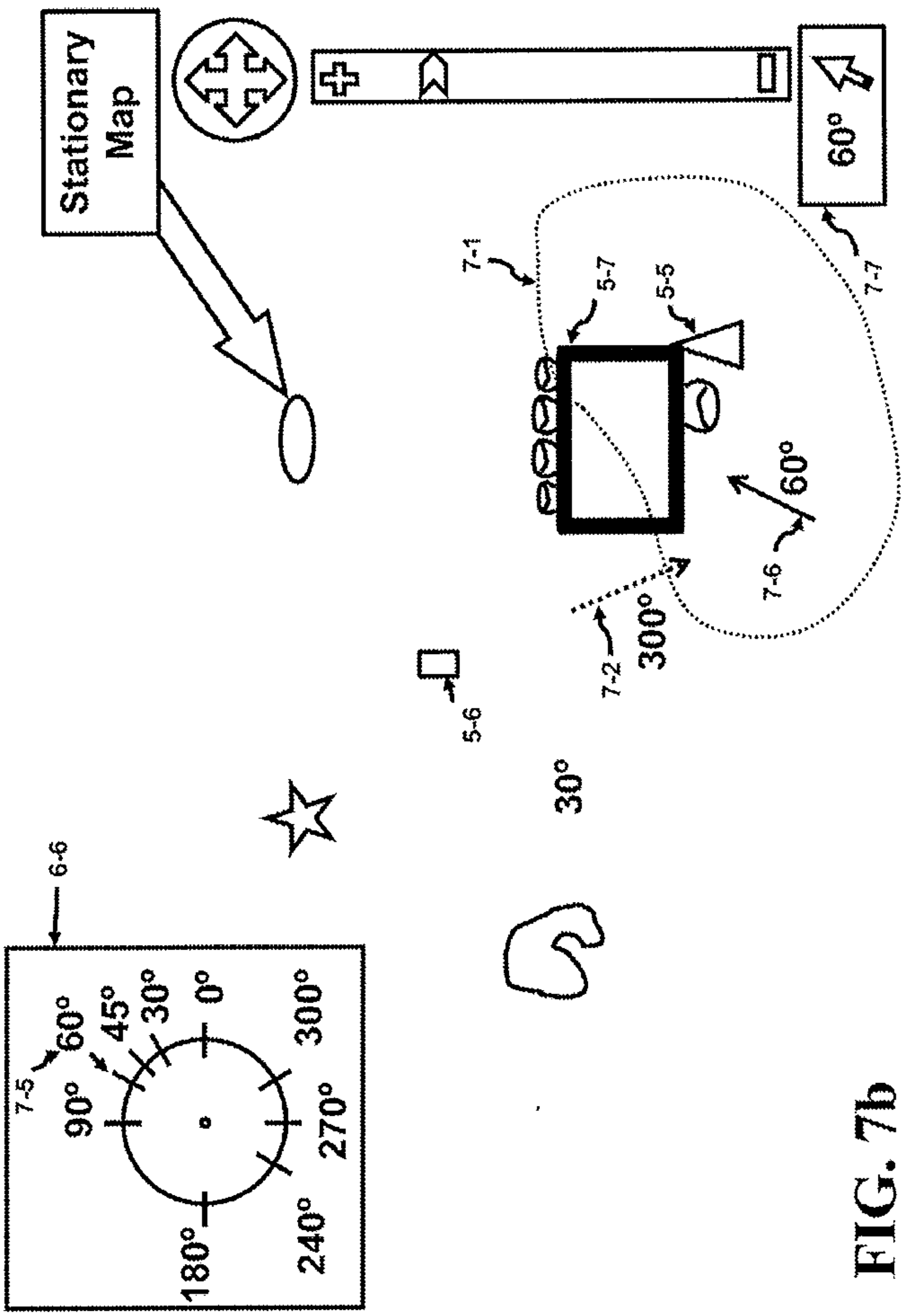
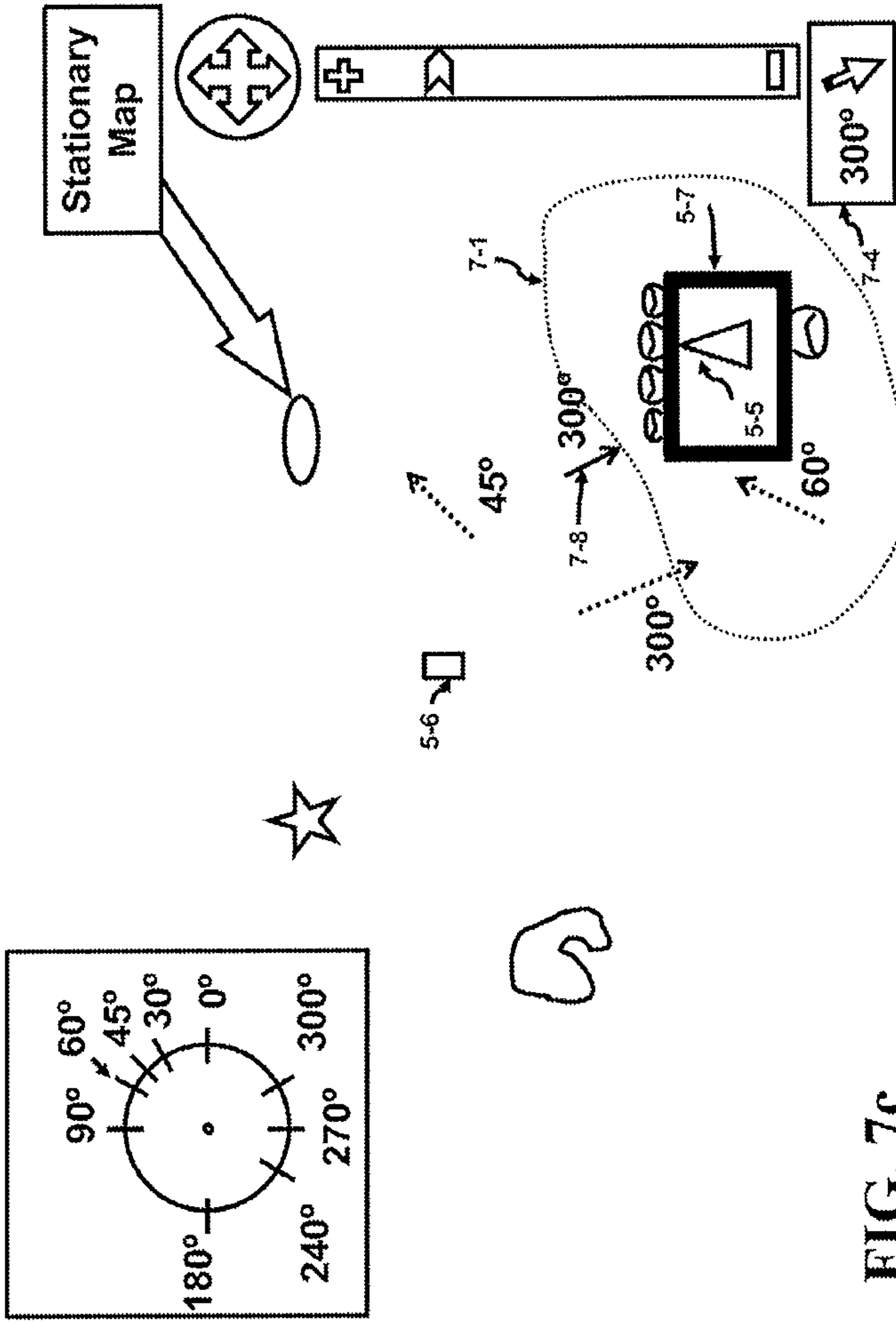

Stationary Map
60°
7-7
7-1
5-7
5-5
60°
7-6
300°
7-2
5-6
30°
6-6
7-5
90°
60°
45°
30°
0°
300°
270°
240°
180°

FIG. 7b



Stationary Map
300°
7-1
5-7
7-4
300°
5-5
45°
60°
7-8
300°
5-6
90°
60°
45°
30°
0°
300°
270°
240°
180°

FIG. 7c

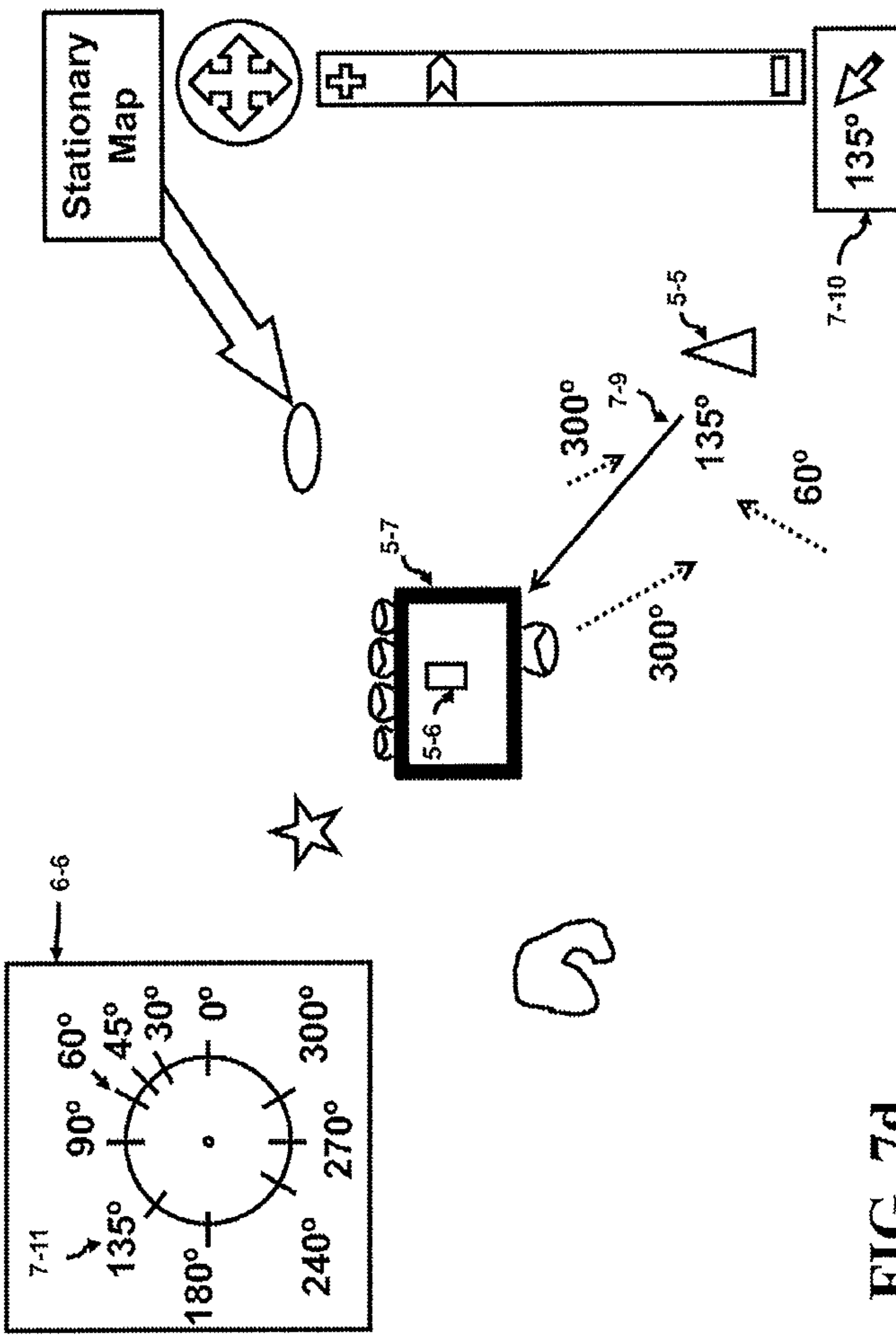

Stationary Map
135°
7-10
5-5
7-9
300°
135°
60°
5-7
300°
5-6
6-6
7-11
90°
60°
45°
30°
0°
300°
270°
240°
180°
135°

FIG. 7d

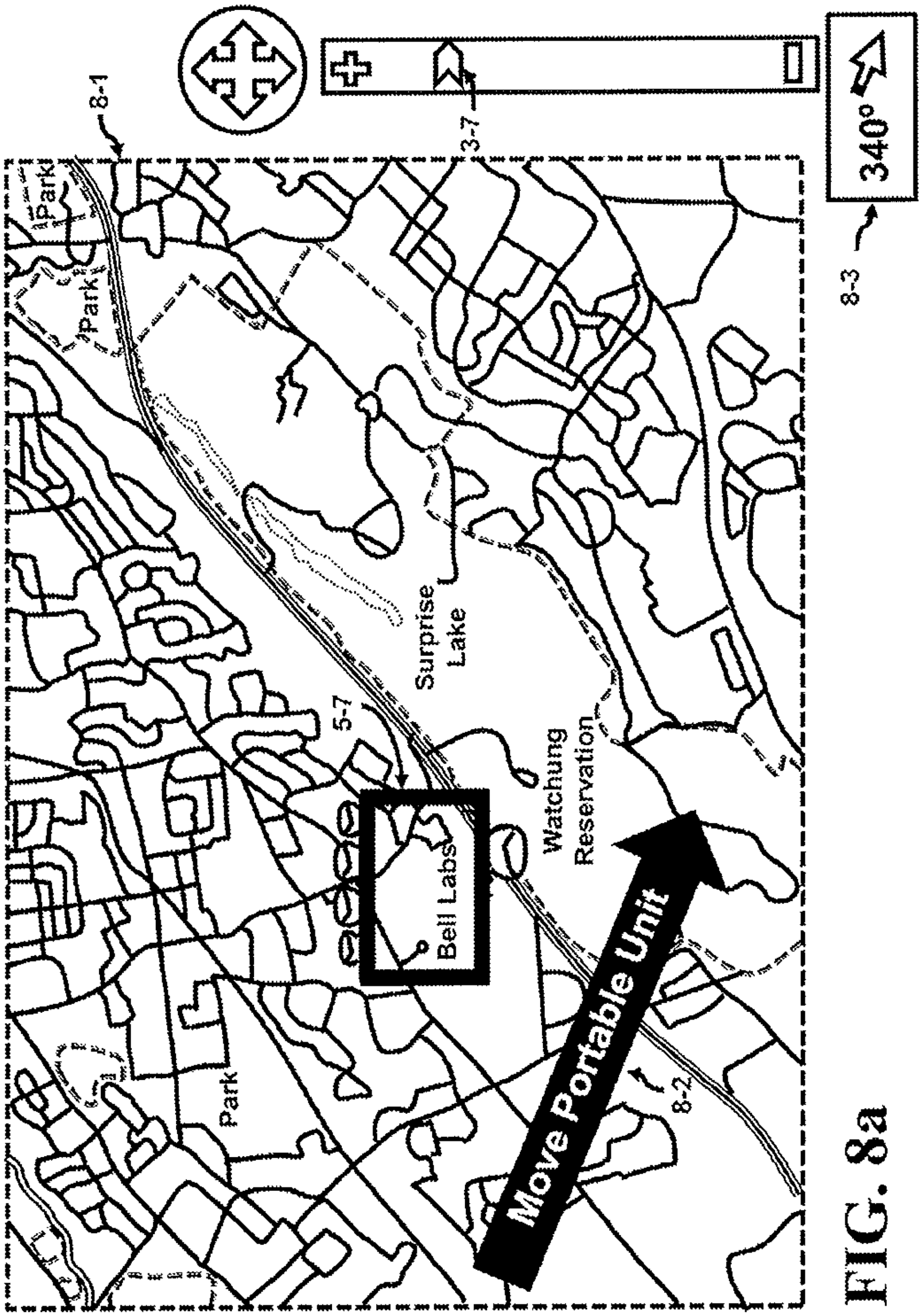
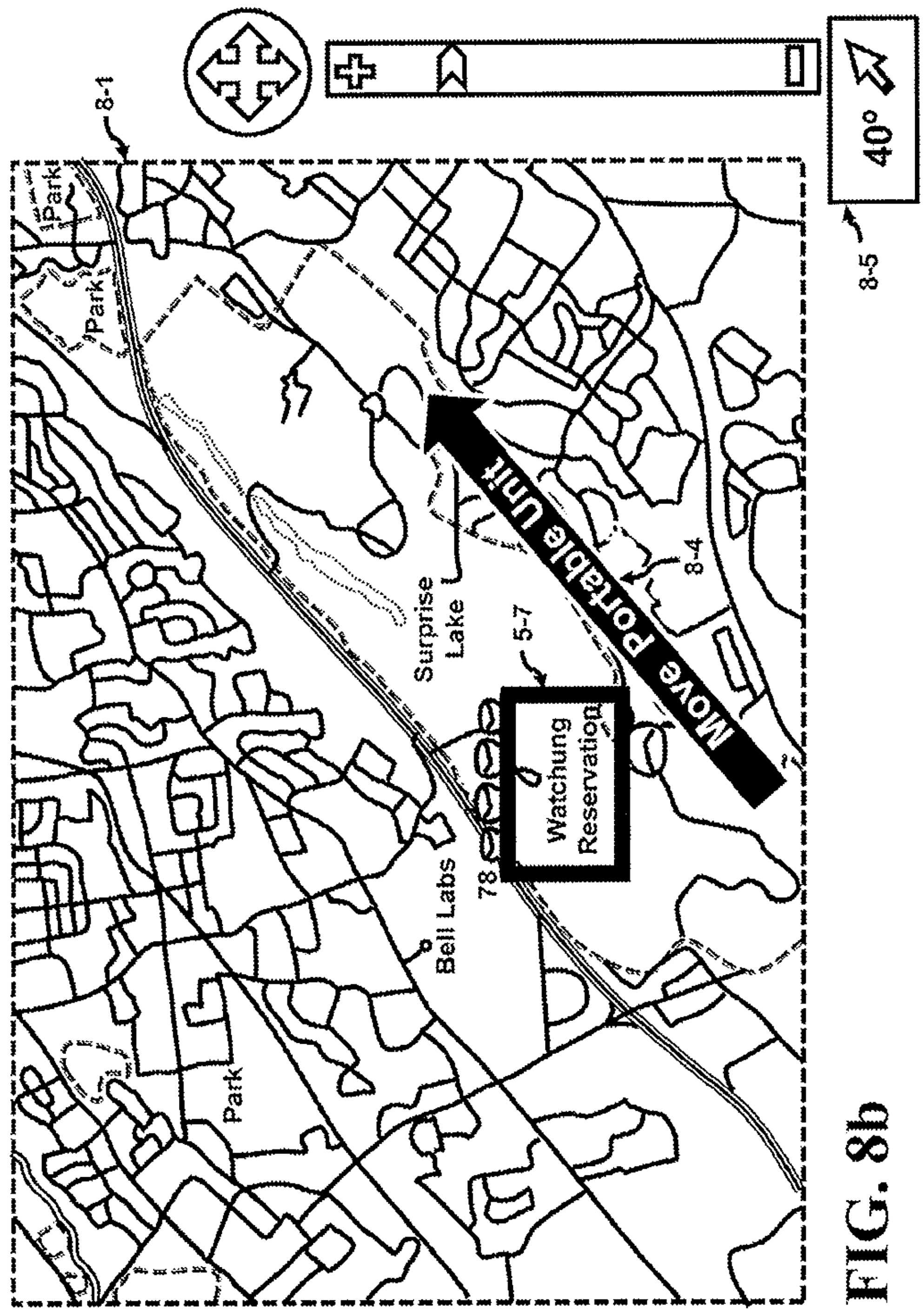
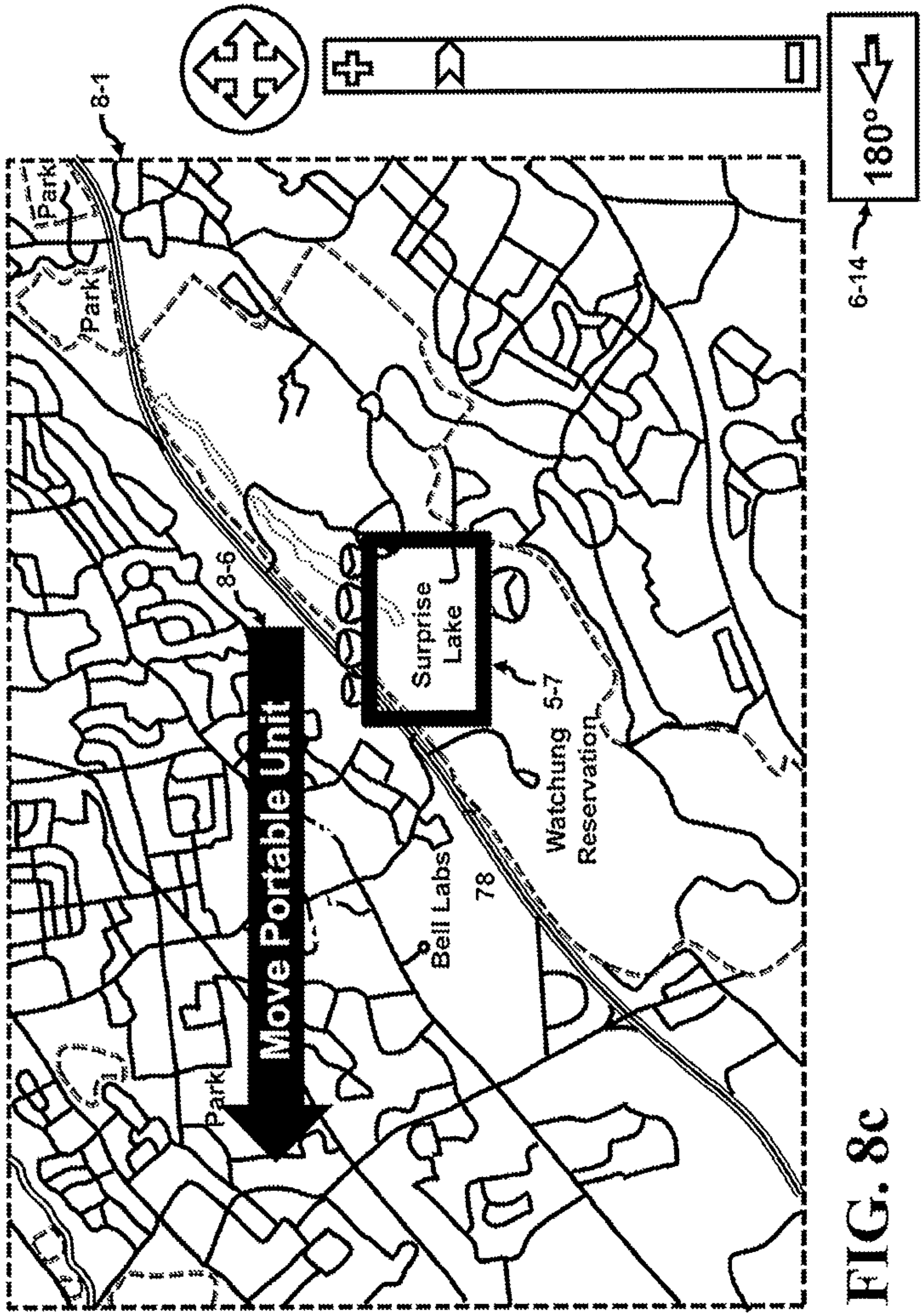

8-1
3-7
340°
8-3
Park
Park
Park
Surprise
Lake
5-7
Watchung
Reservation
Bell Labs
Park
Move Portable Unit
8-2

FIG. 8a



8-1
40°
8-5
Park
Park
Surprise Lake
Move Portable Unit
8-4
5-7
Watchung Reservation
78
Bell Labs
Park

FIG. 8b



8-1
Park
Park
Park
8-6
Move Portable Unit
Surprise
Lake
5-7
Watchung
Reservation
Bell Labs
78
180°
6-14

FIG. 8c

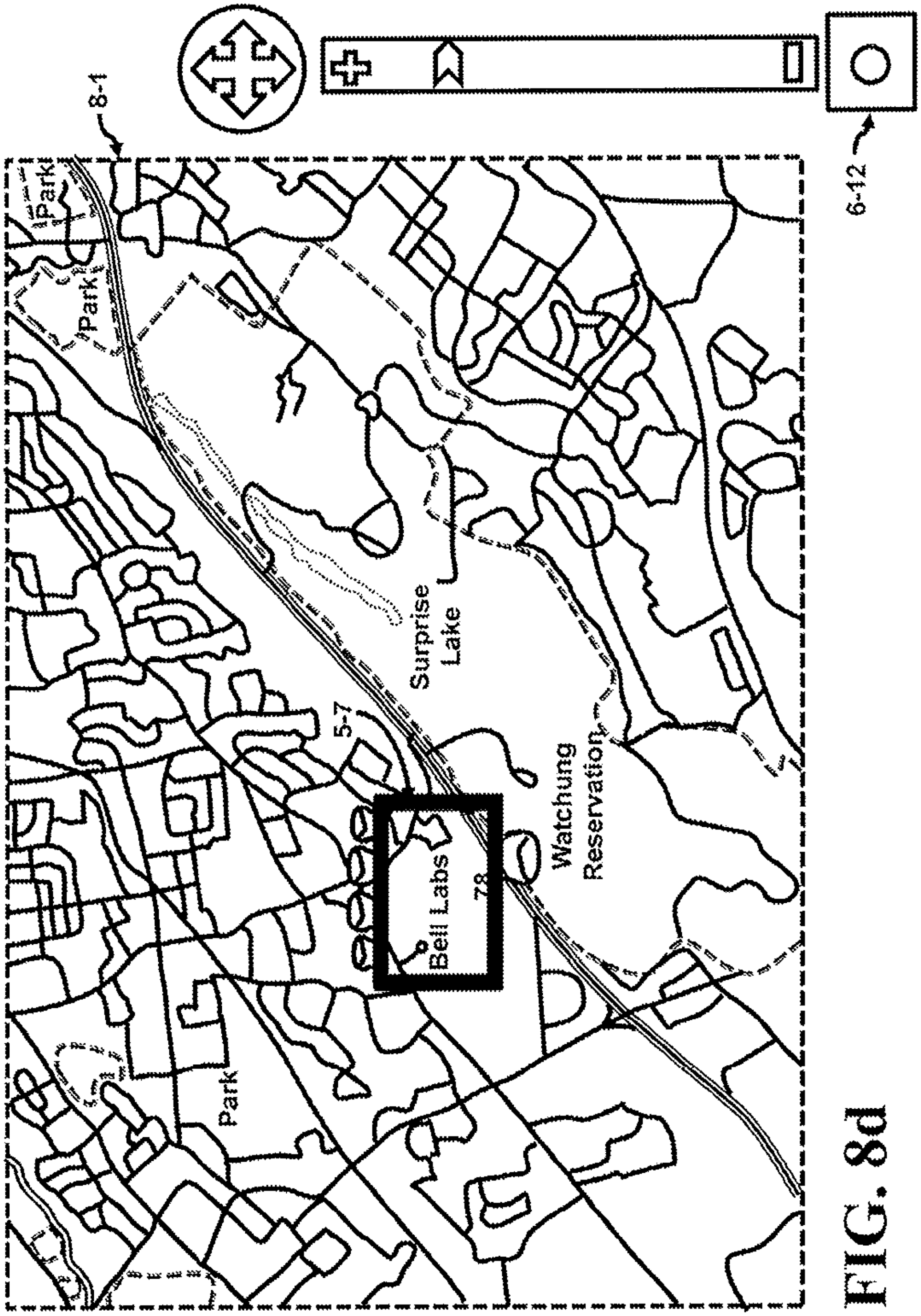

8-1
Park
Park
Surprise Lake
5-7
Watchung Reservation
Bell Labs
78
Park
6-12

FIG. 8d

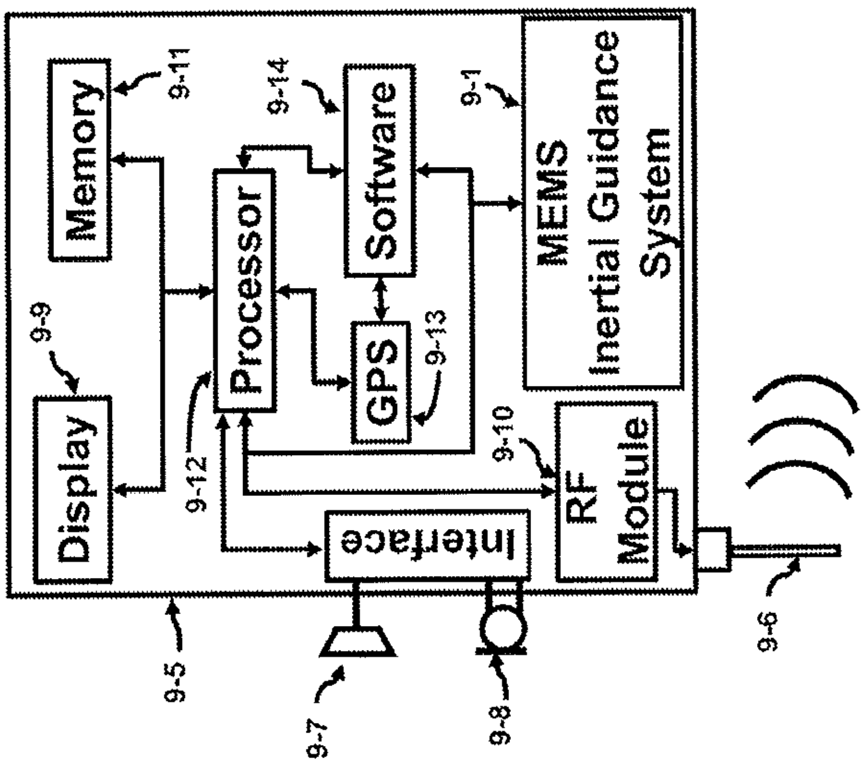

Memory
Display
Processor
Software
GPS
MEMS
Inertial Guidance
System
RF
Module
Interface
9-1
9-5
9-6
9-7
9-8
9-9
9-10
9-11
9-12
9-13
9-14

FIG. 9b

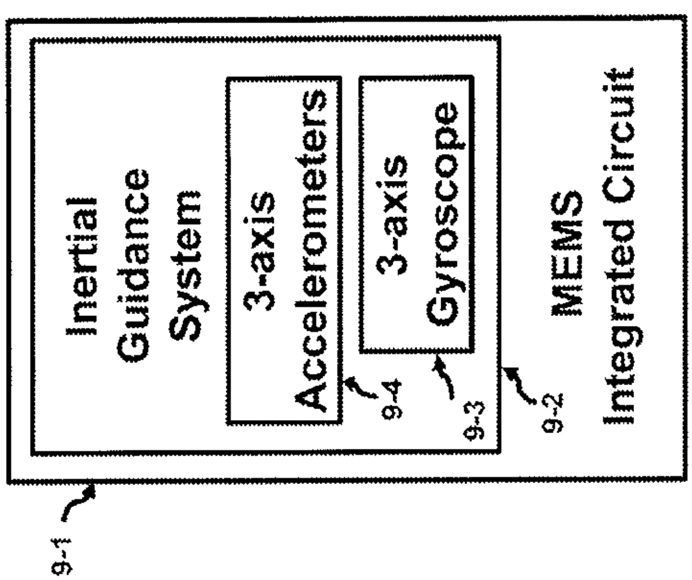

Inertial
Guidance
System
3-axis
Accelerometers
3-axis
Gyroscope
MEMS
Integrated Circuit
9-1
9-2
9-3
9-4

FIG. 9a

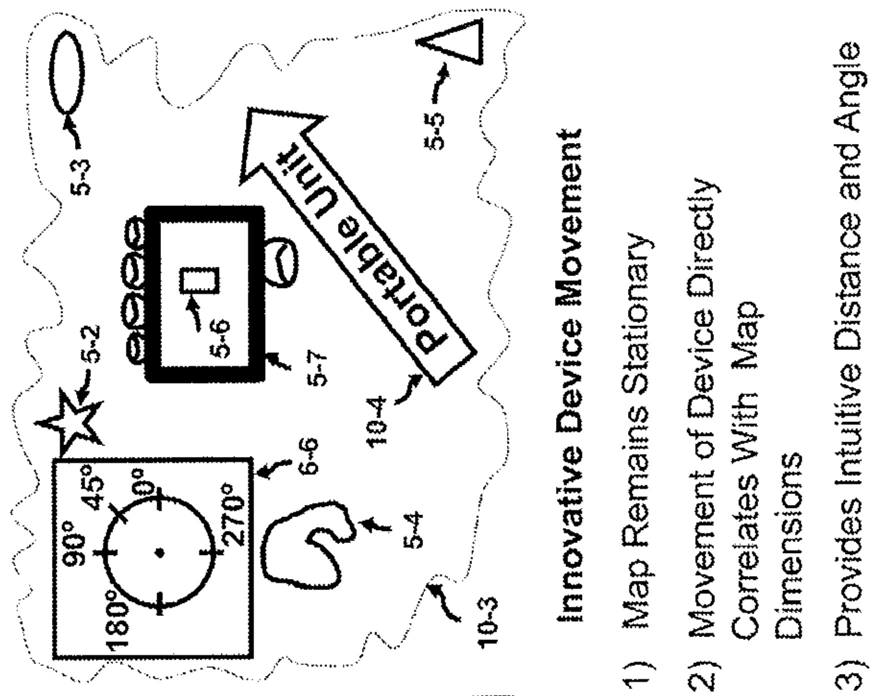


FIG. 10b

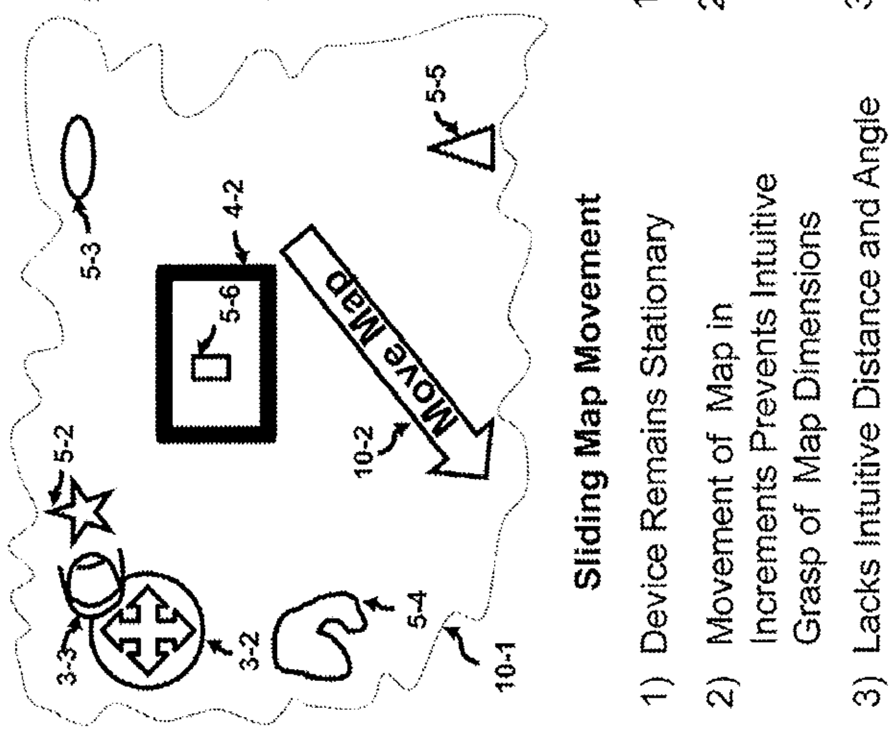


FIG. 10a

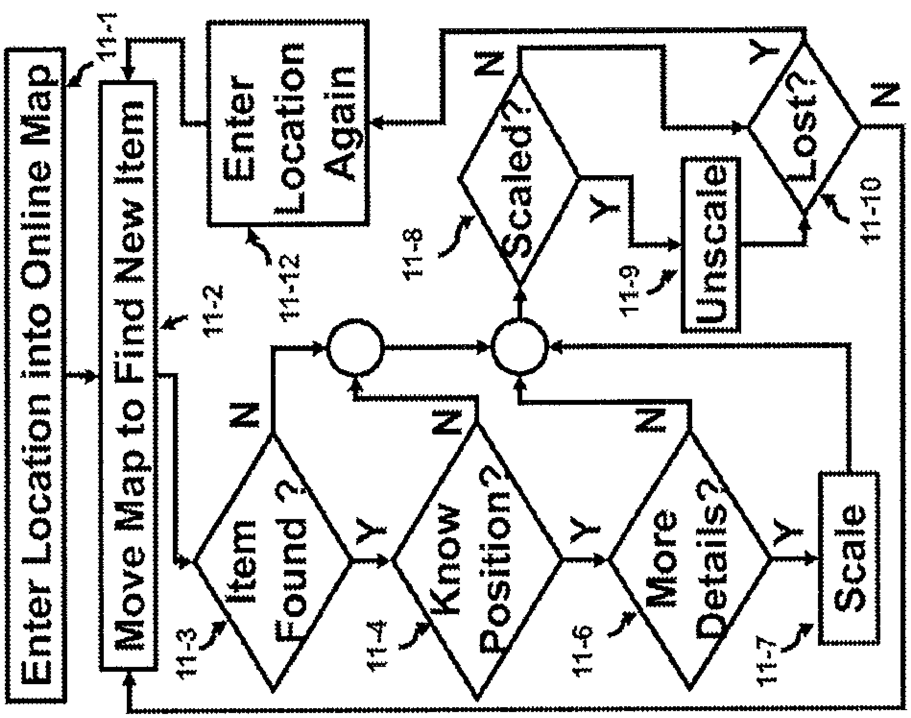


FIG. 11a

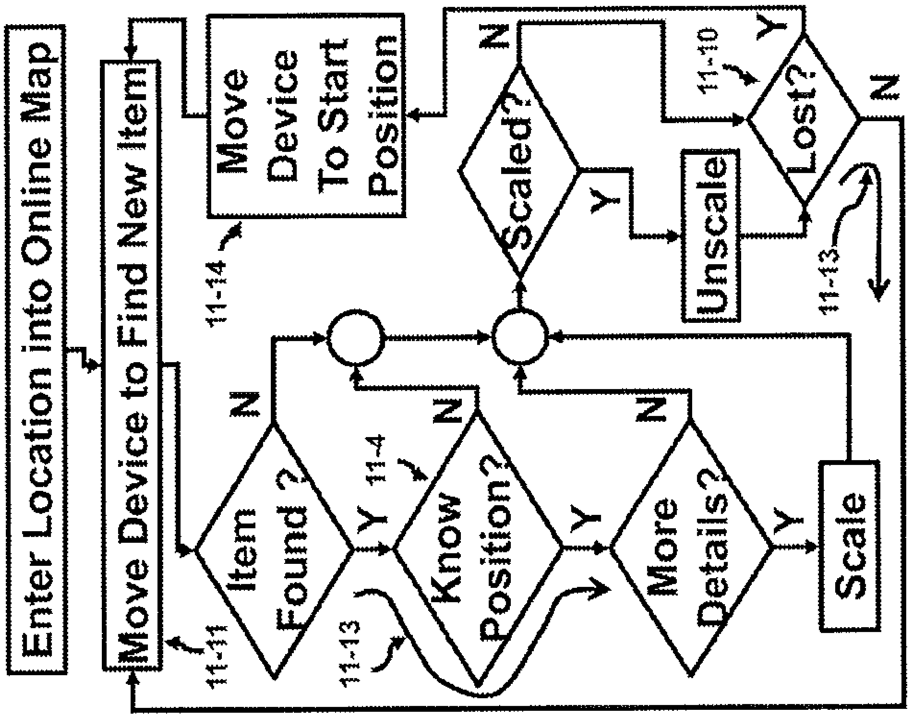
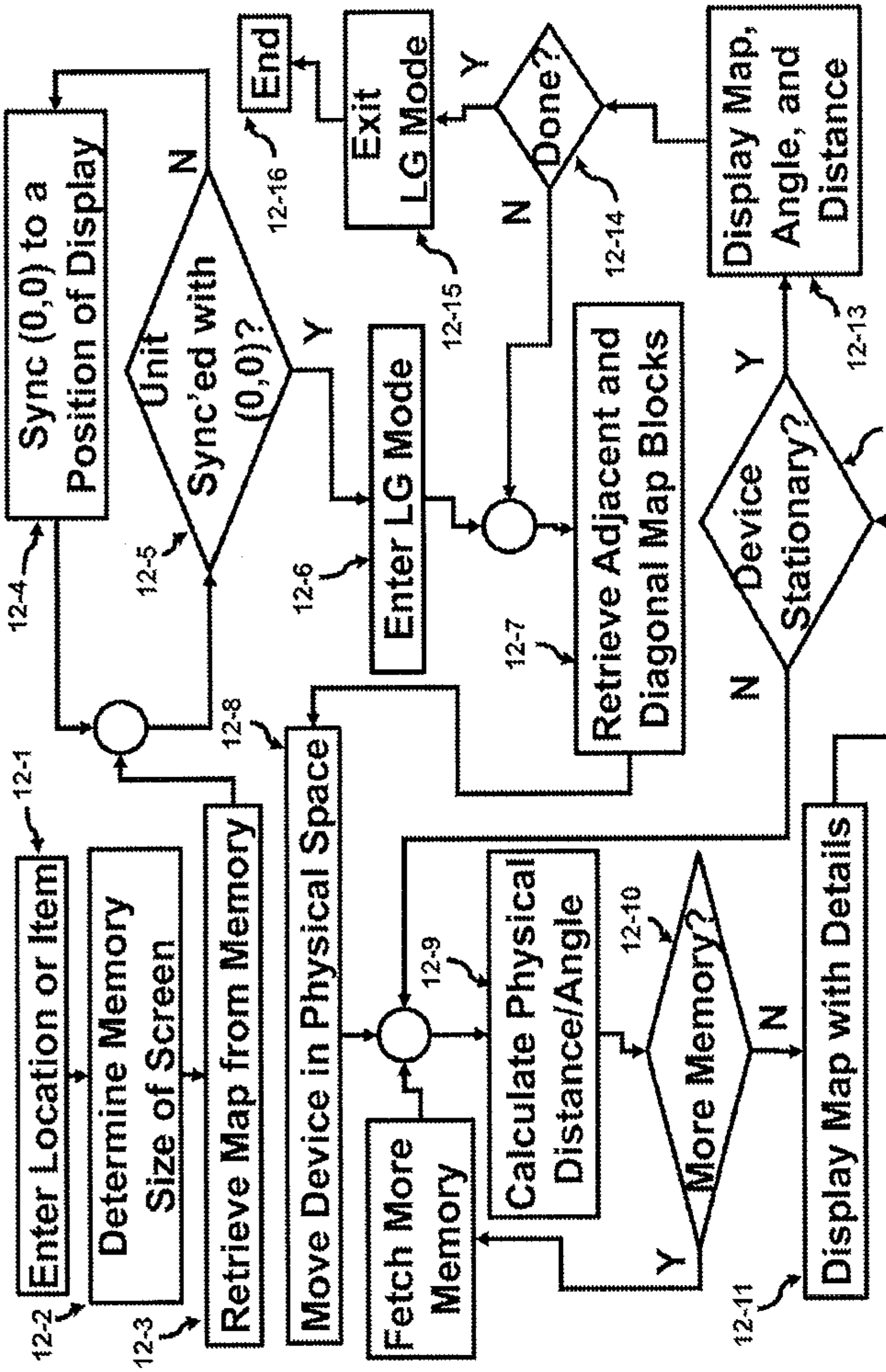


FIG. 11b



Enter Location or Item
12-1
12-2
Determine Memory Size of Screen
12-3
Retrieve Map from Memory
Sync (0,0) to a Position of Display
12-4
Unit Sync'ed with (0,0)?
12-5
N
Y
Enter LG Mode
12-6
Retrieve Adjacent and Diagonal Map Blocks
12-7
Move Device in Physical Space
12-8
Fetch More Memory
Calculate Physical Distance/Angle
12-9
More Memory?
12-10
Y
N
Display Map with Details
12-11
Device Stationary?
12-12
N
Y
Display Map, Angle, and Distance
12-13
Done?
12-14
N
Y
Exit LG Mode
12-15
End
12-16

FIG. 12

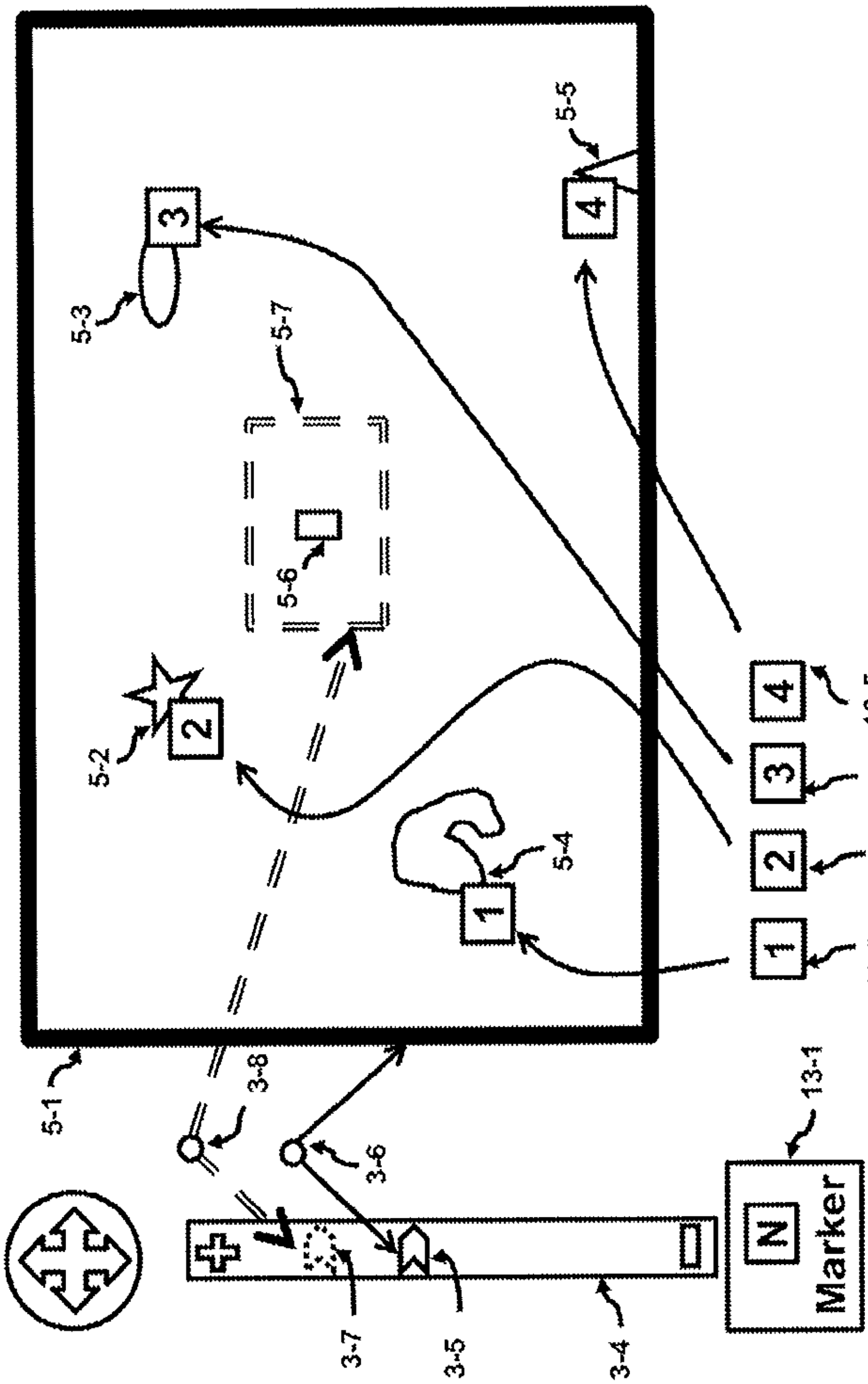

5-1
5-2
5-3
5-4
5-5
5-6
5-7
1
2
3
4
13-1
13-2
13-3
13-4
13-5
3-4
3-5
3-6
3-7
3-8
N
Marker

FIG. 13a

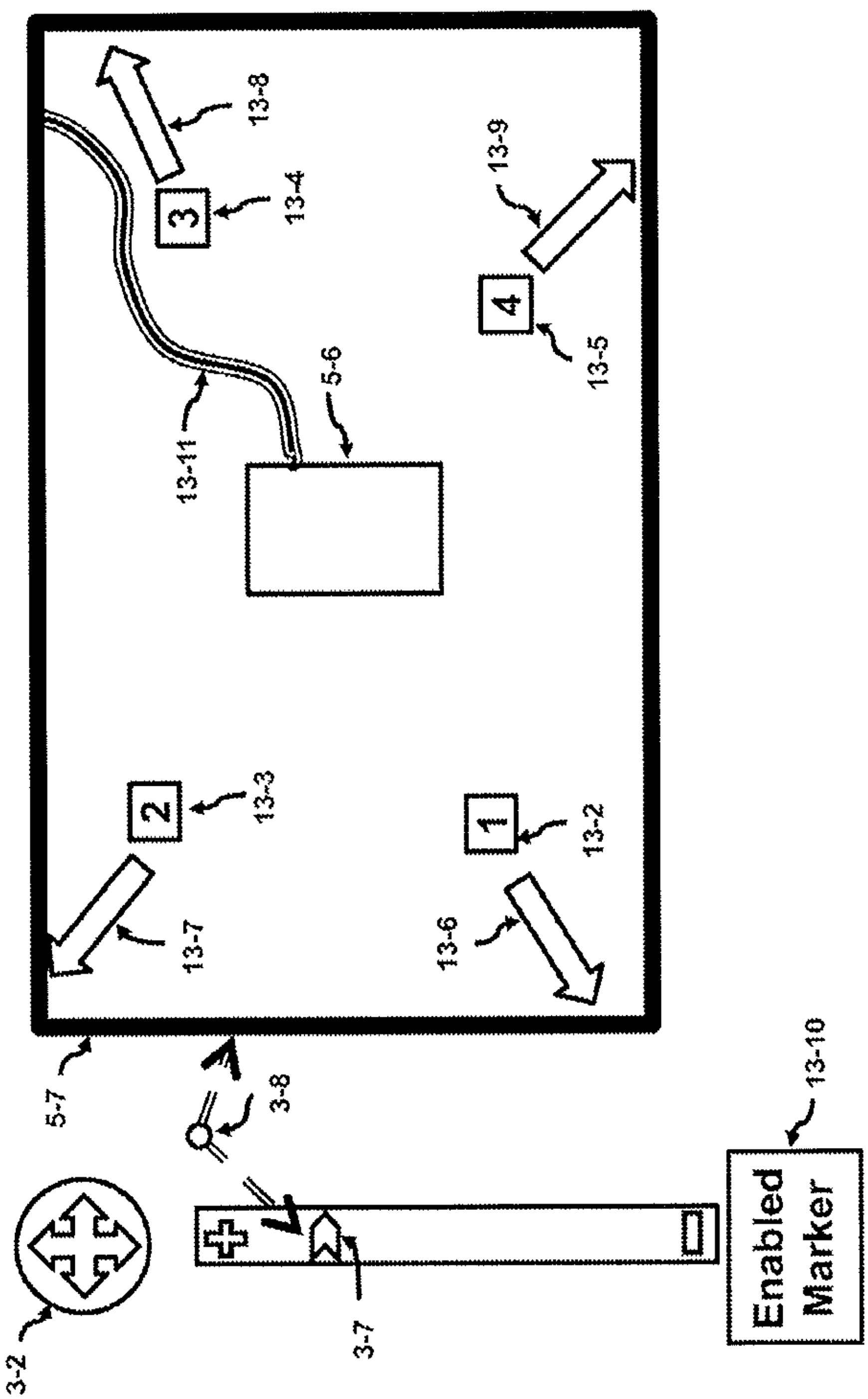

13-8
3
13-4
13-9
4
13-5
5-6
13-11
2
13-3
1
13-2
13-7
13-6
5-7
3-8
13-10
Enabled Marker
3-2
3-7

FIG. 13b

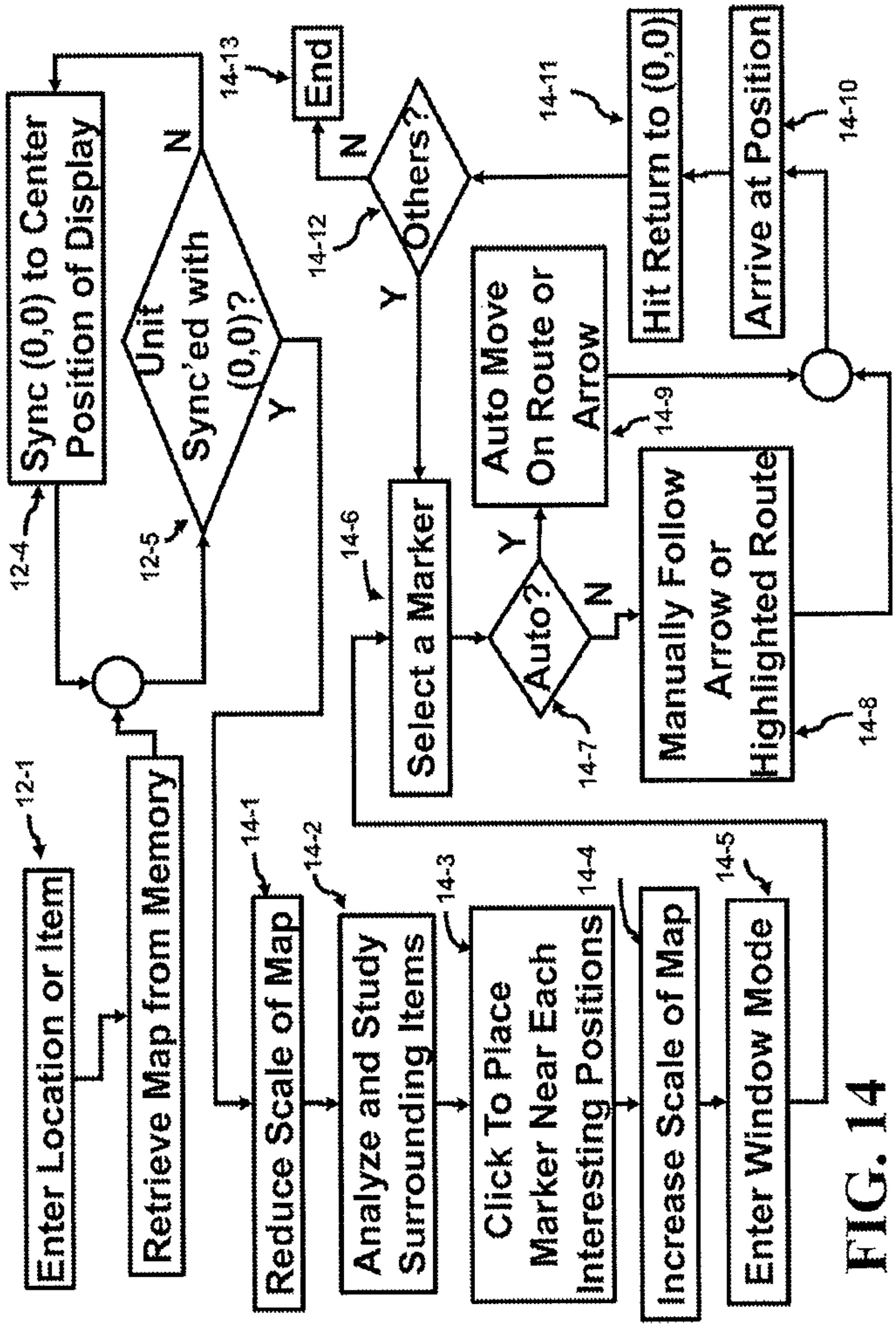
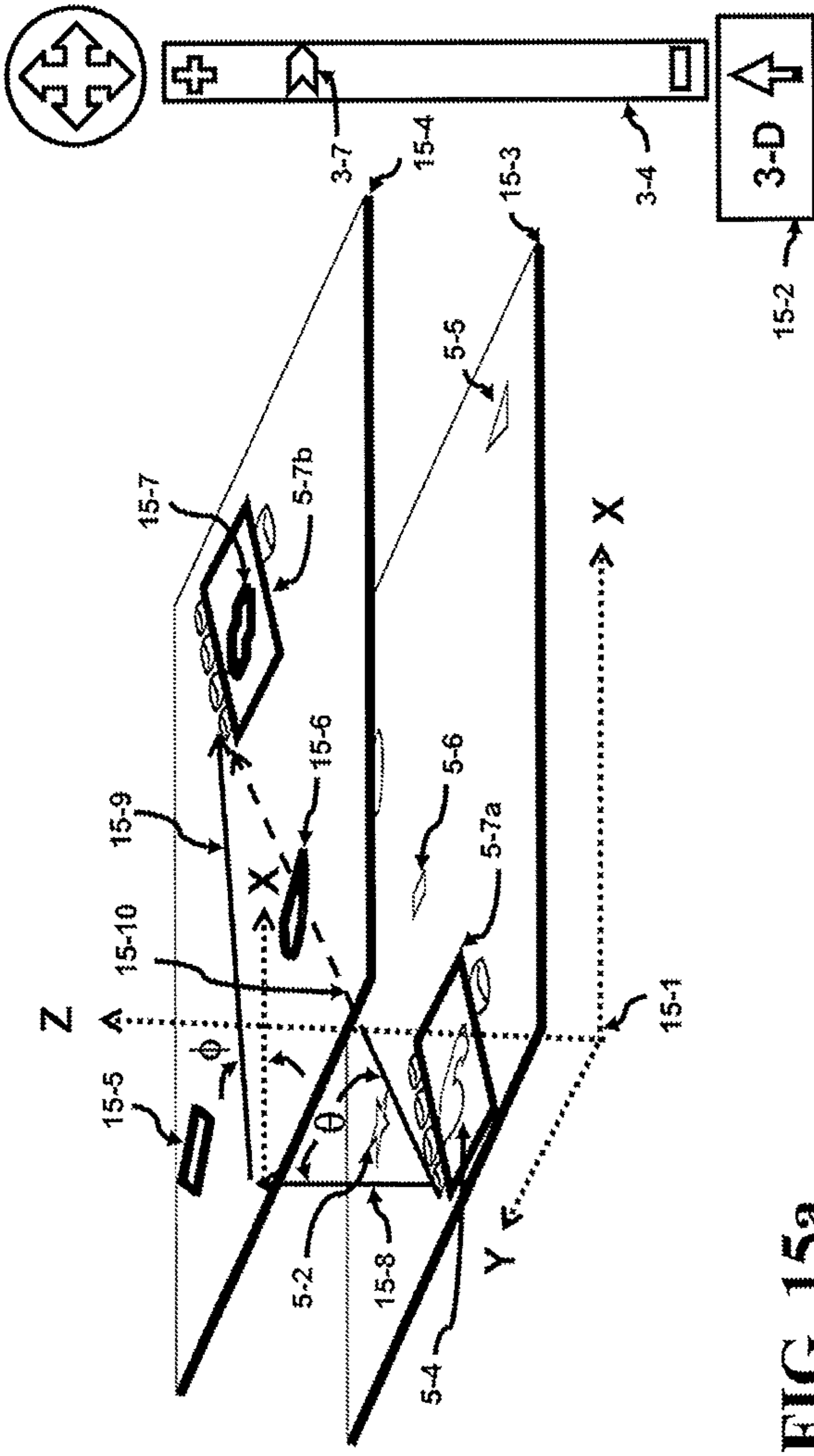

Enter Location or Item
12-1
Retrieve Map from Memory
Sync (0,0) to Center Position of Display
12-4
Unit Sync'ed with (0,0)?
12-5
Y
N
Reduce Scale of Map
14-1
Analyze and Study Surrounding Items
14-2
Click To Place Marker Near Each Interesting Positions
14-3
Increase Scale of Map
14-4
Enter Window Mode
14-5
Select a Marker
14-6
Auto?
14-7
Y
N
Auto Move On Route or Arrow
14-9
Manually Follow Arrow or Highlighted Route
14-8
Arrive at Position
14-10
Hit Return to (0,0)
14-11
Others?
14-12
Y
N
End
14-13

FIG. 14



3-D
3-7
15-4
15-3
3-4
15-2
5-5
15-7
5-7b
X
15-6
5-6
15-9
5-7a
X
15-10
Z
15-1
15-5
φ
θ
5-2
15-8
Y
5-4

FIG. 15a

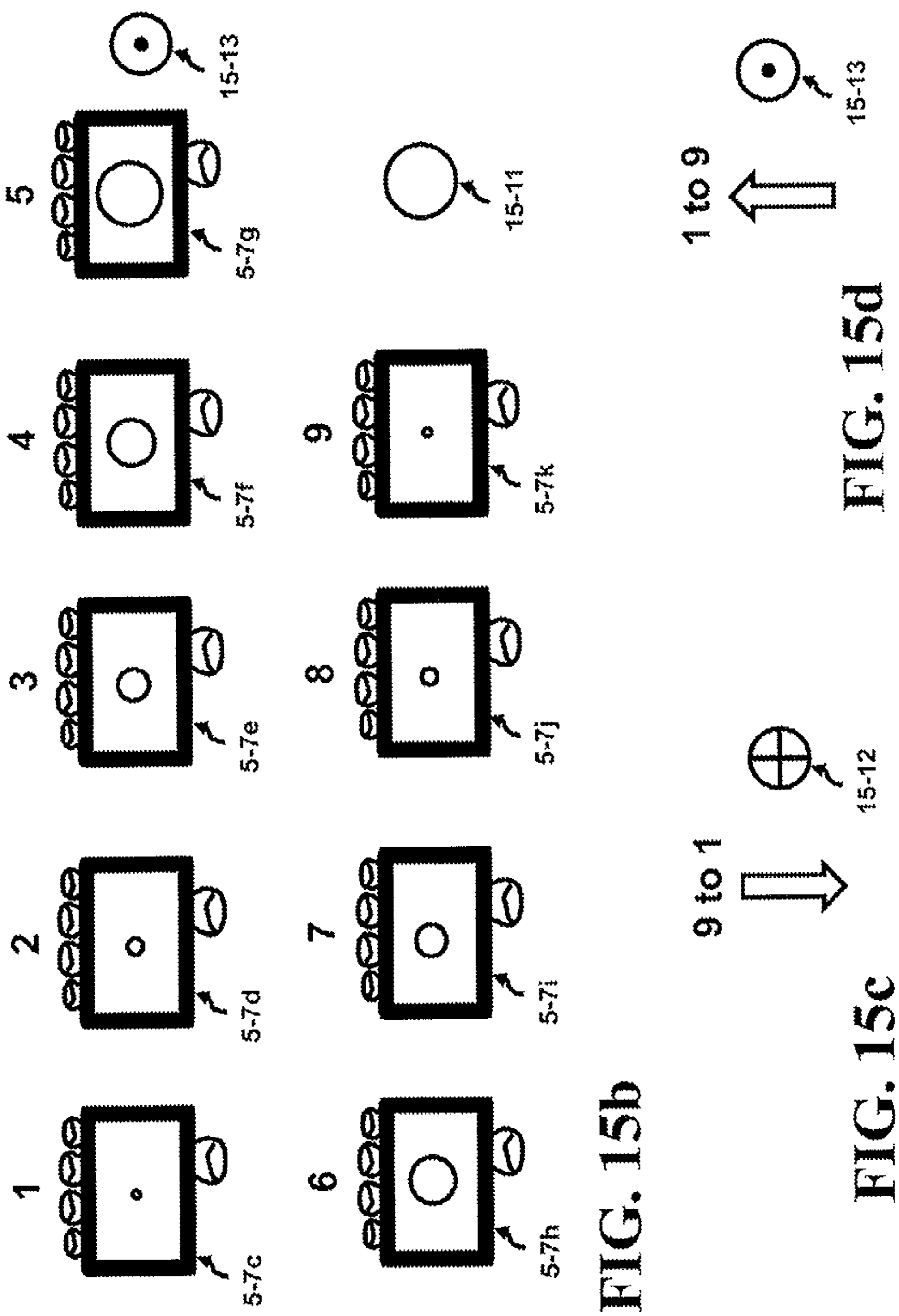


FIG. 15b

FIG. 15c

FIG. 15d

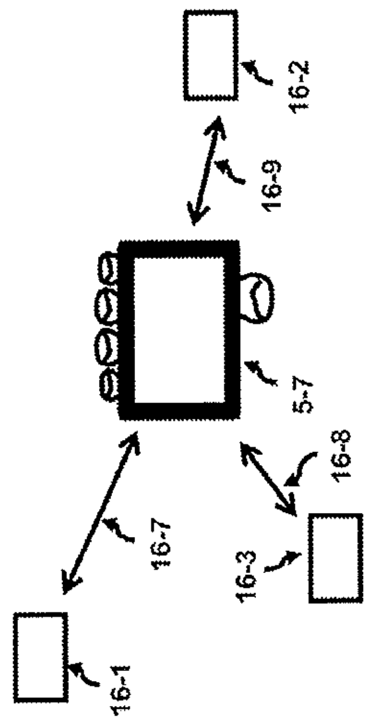


FIG. 16b

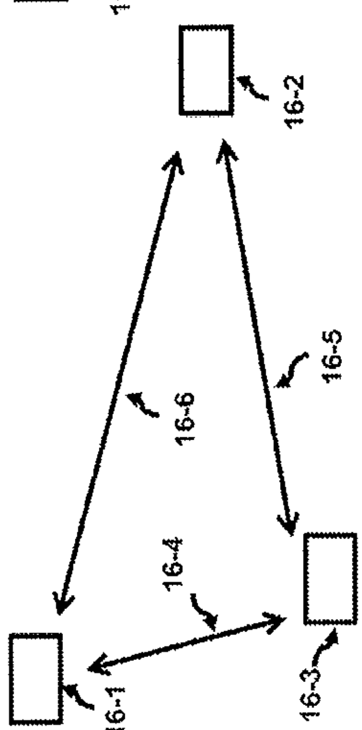


FIG. 16a

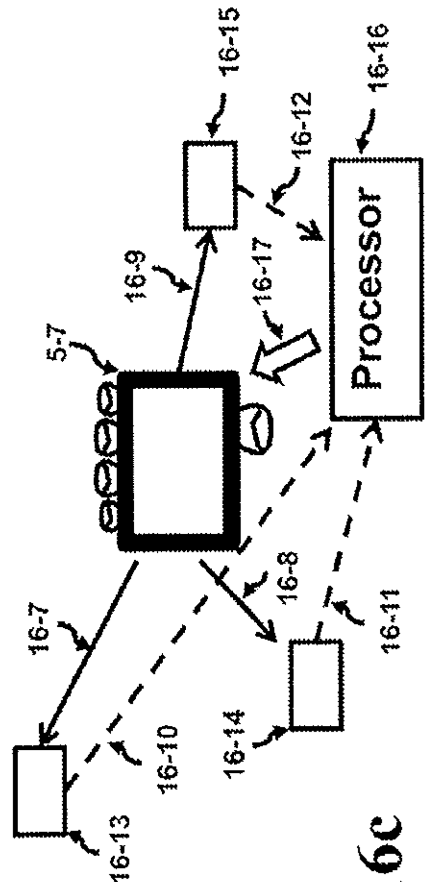


FIG. 16c

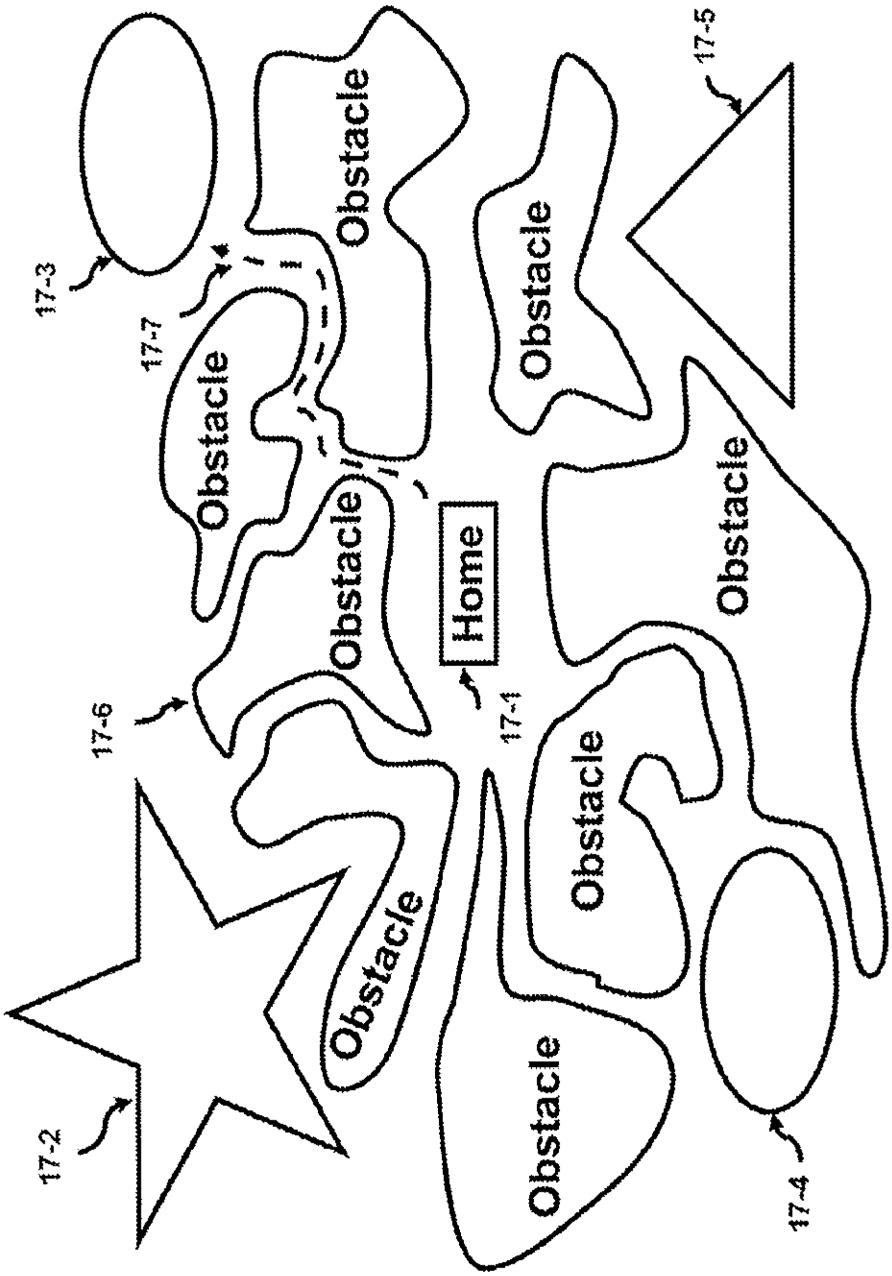

Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Obstacle
Home
17-1
17-2
17-3
17-4
17-5
17-6
17-7

FIG. 17

METHOD AND APPARATUS OF PHYSICALLY MOVING A PORTABLE UNIT TO VIEW AN IMAGE OF A STATIONARY MAP

CROSS REFERENCE TO RELATED APPLICATIONS

The present application is a continuation of application Ser. No. 14/097,386, filed on Dec. 5, 2013, entitled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map" and identified as a U.S. Pat. No. 8,706,400, which is a continuation of application Ser. No. 13/967,299, filed on Aug. 14, 2013, and now a U.S. Pat. No. 8,620,545 issued Dec. 31, 2013 entitled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map" which is a continuation of application Ser. No. 13/337,251, filed on Dec. 26, 2011, and now a U.S. Pat. No. 8,532,919 issued Oct. 10, 2013 entitled "Method and Apparatus of Physically Moving a Portable Unit to View an Image of a Stationary Map" which is invented by the at least one common inventor as the present application and is incorporated herein by reference in their entireties. The present application is related to the co-filed U.S. application entitled "Method and Apparatus for Identifying a 3-D Object from a 2-D Display of a Portable Unit" filed on Dec. 26, 2011 with Ser. No. 13/337,253 and the co-filed U.S. application entitled "Method and Apparatus of a Marking Objects in Images Displayed on a Portable Unit" filed on Dec. 26, 2011 with Ser. No. 13/337,252, which are all invented by the at least one common inventor as the present application and are all incorporated herein by reference in their entireties.

BACKGROUND OF THE INVENTION

Handheld units or portable devices such as cell phones, smart phones, iPads, Kindles, Blackberries, Navigation devices (Magellan or Garmin) and Android systems offer the ability to use location assistant devices such as maps. Maps online are provided by Google, Yahoo!Maps, MapQuest Maps and Bing Maps. When a user of the portable device uses maps, the map can be scrolled by using a button control or a touch screen. The touch screen buttons can adjust direction of map movement and can scale the image on the screen. For example, when using the touch screen two fingers sliding toward each other decreases the scale while sliding the two fingers sliding apart magnifies the scale. Both types of control offer the same results. In addition, some of these commands can be made by speaking where an on-board voice recognition unit can interpret the voice of the user and comply. When the destination is viewed and an item of interest may be outside of the range of the screen of the hand handheld unit, one must scale down (minimize) the screen to get a bearing of where this particular item of interest is with respect to the initial requested destination. However, at times, that scaled down map eliminates detail forcing the user to scale up (magnify) the map to reveal more detail of the map on the screen or display of the portable unit. These minimization and magnification processes may cause the user to lose bearing, particularly since the distance between locations is difficult to sense from scrolling the map across the screen of a portable device. This invention helps to overcome this shortcoming in current portable systems for providing map directions and offer several other advantages as well.

BRIEF SUMMARY OF THE INVENTION

Various embodiments and aspects of the inventions will be described with reference to details discussed below, and the

accompanying drawings will illustrate the various embodiments. Some diagrams are not drawn to scale. The following description and drawings are illustrative of the invention and are not to be construed as limiting the invention. Numerous specific details are described to provide a thorough understanding of various embodiments of the present invention. However, in certain instances, well-known or conventional details are not described in order to provide a concise discussion of embodiments of the present inventions.

One of the embodiments of the disclosure introduces a background map that remains stationary. It is the portable unit that moves within a plane parallel to the screen of the portable unit. As the user moves the unit, images of the background map appear on the screen of the portable device. The user scans the stationary map presented on the screen of a moving portable unit. This has several benefits since now relative distances and angular displacements between objects that are outside of the range of the screen of the portable unit can be immediately located and placed into view on the screen of a portable unit. The unit is moved through space to a physical position that has the coordinates of distance and angle from an origin or reference point. The distance and angle are used to by the system to calculate the portion of the stationary map that would be visible on the screen of the portable unit. The handheld or portable unit is like a Sliding Window which provides a view of this image of a stationary map lying in the background of the portable unit. The image on the screen of the portable unit is comprised of a number of points or pixels.

Current processors are being clocked at 1 billion cycles per second and faster. In addition, there are special purpose accelerators for video applications. The calculations for the Sliding Window mode should be able to run in real time displaying images on the screen of the portable device as the device is moved. Due to the superior performance, as the user moves the portable unit, the appropriate portion of the stationary image of the map appears on the screen. The image on the screen and the stationary background image are effectively superimposed over one another. Thus, the user assesses the relative distance between a source location and a destination location and because the user moved the portable unit to view the destination location, the user can feel or relate to the distance because of the physical motion. And it is not only the relative distance that is available, but it's also the orientation or movement at an angle of the handheld unit that provides further information about the content of the image.

Another one of the embodiments of the disclosure introduces a way of initializing the handheld device to enter the Siding Window function. For example, a tilt and a shift of the handheld unit can indicate to the handheld unit to enter the Sliding Window mode. Another method is by voice command by stating "Sliding Window mode". Finally, a button (on a screen or a physical one on the unit) can be depressed to enter the Sliding Window mode.

A further embodiment is to mark an area of interest on the screen of a portable device. Each interesting location on the screen is marked by a transparent flag or marker. Then, when the user scales up (magnifies the image) the map to view one of the locations, transparent arrows are placed on the screen identified with transparent location markers indicating the direction the user needs to move to arrive at the remaining desired locations marked by markers. In this embodiment, either the portable unit can be moved while the map remains stationary or the device remains stationary while the map is moved by the touch screen. By following the transparent arrow, which constantly calculates the new direction as movement occurs, the user arrives at the desired location, often in a shortest distance, without getting lost. Once this location is

viewed, the user can then proceed to follow a second transparent arrow corresponding to a second desired location. This can be done for each marked location without changing the scale or entering new data since all transparent arrows (markers) can be shown on the screen. An option can exist where the user moves to the marked location immediately by issuing a verbal or physical command.

Another embodiment is to view a stationary three dimensional (3-D) background image by moving the handheld unit within a three dimensional (3-D) space. The map would be three dimensional and would correspond in scale to the display screen of the portable unit. The third dimensional can be viewed by moving the device perpendicular to the plane of the screen of the portable device forming a rectangular cuboid (in addition, this angle can be different than 90°). Thus, slices of the volume of the 3-D image are viewed. The user can view the map in the XY plane, XZ plane, YZ plane or any angled plane between these three axes.

Another embodiment is to view a three dimensional (3-D) background image by moving the background image of a movable map on the screen of a stationary portable unit. The touch screen can be used to move the image in two dimensions corresponding to the plane of the screen. The third dimension would be perpendicular or at some angle from the handheld unit within a three dimensional (3-D) space. The third dimensional can be viewed by moving the map perpendicular to the plane of the screen of the portable device, by a temperature scale or touching a transparent tail or head. Thus, slices or cross sections, of the volume of the 3-D image are viewed on the screen. The user can integrate the cross sectional images to determine the solid. The user can view the map in the XY plane, XZ plane, YZ plane or any angled plane between these three axes.

One embodiment of such a Sliding Window can be used viewing 3-D maps of streets, geographical locations, and locations within buildings and rooms. The physical interaction of the user with the map provides a freedom of motion and interaction with the image of a stationary map which earlier technologies could not provide. This aspect can be used in other programs that may be useful for entertainment, business, and leisure.

In the world of entertainment, some users enjoy games such as angry birds, where the user interacts with the game. The physical interaction of the Sliding Window with the stationary image can be used to create a game where one may have to scan the area to reach certain goal locations that provide winning points. Obstacles may be placed in the paths which need to be avoided. The user can feel where the obstacles and the goal locations are by relative displacement from the initial or reference location. The user avoids touching the obstacle and making their way to the goal locations.

Another embodiment of a game would be to view several parallel planes and integrate the images together within the mind of the user. The user then uses this information to guess what the shape of the object is.

Another embodiment relates to a portable unit comprising: an image of a stationary map at a known scale; a first location in said image displaced from a second location in said image by a vector; said vector has an angle and a distance; a screen of said portable unit displaying a portion of said image at said known scale; said screen has a diagonal less than said distance; said screen displaying, said first location; and said portion of said image substantially is superimposed over said image of said stationary map; whereby said portable unit is moved by said angle and said distance to display second location, further comprising: said image of said stationary map mapping onto a two dimensional plane, further comprising: an inertial guidance system providing movement data of said portable unit to a microprocessor; whereby said microprocessor calculates said angle and said distance using software, further comprising: an origin mapped to a point on said image of said stationary map, further comprising: an X-axis mapped to a line on said image of said stationary map. The portable unit further comprising: a compass to present an angular direction equal to said angle; a scale to adjust a magnification equal to said known scale; and an identifier to present a mode of operation, further comprising: a memory to store said image of a stationary map; and an RF module to access an external database to supply said memory with data.

Another embodiment relates to a portable unit comprising: an image of a stationary map stored at a known scale in a memory; a portion of said image with a first location at said known scale displayed on a screen of said portable unit; said portable unit moved by a directional distance; movement data measured of moving said portable unit in said directional distance; a position of a new location of said image of said stationary map calculated based on said movement data and said known scale; and said new location of said image of said stationary map is displayed on said screen, further comprising: said image of said stationary map maps into a three dimensional space, further comprising: an inertial guidance system providing said movement data of said portable unit to a microprocessor, whereby said microprocessor calculates said directional distance using software, whereby said microprocessor calculates a phi angle and a theta angle. The portable unit further comprising: an origin mapped to a point within said image of said stationary map representing said three dimensional space, further comprising: two of three axes mapped onto a plane within said image of said stationary map representing said three dimensional space. The portable unit further comprising: an RF module to access an external database to supply said memory with data, further comprising: a plurality of points from each of said three axes displayed on said screen of said portable unit.

Another embodiment relates to a method of moving a portable unit by a directional distance displaying a first location to display a new location comprising the steps of: storing an image of a stationary map at a known scale in a memory; displaying on a screen of said portable unit a portion of said image with said first location at said known scale; moving said portable unit by said directional distance; measuring movement, data of moving said portable unit in said directional distance; calculating a position of said new location of said image of said stationary map based on said movement data and said known scale; and displaying said new location of said image of said stationary map, further comprising the steps of: mapping said image of said stationary map into a three dimensional space, further comprising the steps of: providing said movement data of said portable unit from an inertial guidance system to a microprocessor; whereby said microprocessor calculates said directional distance using software, further comprising the steps of: calculating a phi angle and a theta angle using said microprocessor. The process further comprising the steps of: mapping a three dimensional point within said image of said stationary map to an origin. The process further comprising the steps of accessing an external database with an RF module to supply said memory with data, further comprising the steps of: displaying on said screen of said portable unit a plane representing a plurality of points from each three axes.

BRIEF DESCRIPTION OF THE DRAWINGS

Please note that the drawings shown in this specification may not necessarily be drawn to scale and the relative dimen-

sions of various elements in the diagrams are depicted schematically. The inventions presented here may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be through and complete, and will fully convey the scope of the invention to those skilled in the art. In other instances, well-known structures and functions have not been shown or described in detail to avoid unnecessarily obscuring the description of the embodiment of the invention. Like numbers refer to like elements in the diagrams.

FIG. **1***a* depicts a connection between the internet and a notebook computer.

FIG. **1***b* shows a block diagram representation of the connection in FIG. **1***a*.

FIG. **2***a* illustrates a connection between the internet and a portable device in accordance with the present invention.

FIG. **2***b* shows a block diagram of the portable device in FIG. **2***a* in accordance with the present invention.

FIG. **3***a* presents a map where a large scale and a first sub-portion of the map can be viewed on the screen of a portable device depending on the scale in accordance with the present invention.

FIG. **3***b* presents a map of the first sub-portion that fills the full screen of a portable device at the magnified scale in accordance with the present invention.

FIG. **3***c* depicts the map where the same large scale and a second sub-portion of the map can be viewed on the screen of a portable device depending on the scale in accordance with the present invention.

FIG. **3***d* shows the map where the same large scale and a third sub-portion of the map can be viewed on the screen of a portable device depending on the scale in accordance with the present invention.

FIG. **4***a* illustrates the hand-held stationary device presenting the first sub-portion of the map on the screen of a portable device when the scale is magnified in accordance with the present invention.

FIG. **4***b* depicts the hand-held stationary device presenting the second sub-portion of the map on the screen of a portable device when the scale is magnified in accordance with the present invention.

FIG. **4***c* illustrates the hand-held stationary device presenting the third sub-portion of the map on the screen of a portable device when the scale is magnified in accordance with the present invention.

FIG. **5***a* depicts a representative map where a large scale and a first sub-scale portion of the representative map can be viewed on the screen of a portable hand held device depending on the scale in accordance with the present invention.

FIG. **5***b* depicts a representative map where the first sub-scale portion of the representative map is viewed on the screen of a portable hand held device at a magnified scale in accordance with the present invention.

FIG. **6***a* shows a sub-scale portion of the representative map of FIG. **5***a* can be viewed on the screen of a portable hand held device when the scale is magnified in accordance with the present invention.

FIG. **6***b* illustrates a first sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***c* shows a second sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***d* depicts a third sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***e* illustrates a fourth sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***f* illustrates a fifth sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***g* depicts a sixth sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***h* shows a seventh sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***i* presents an eighth sub-scale portion of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **6***j* depicts the first, fourth, sixth and eighth sub-scale portions of the representative map of FIG. **5***a* that can be viewed on the screen of a portable hand held device after the portable hand held device is physically moved to these locations in accordance with the present invention.

FIG. **7***a-d* shows a search process to find a particular sub-portion of the representative map of FIG. **5***a* that can be found on the screen of a portable hand held device after the portable hand held device is physically moved in accordance with the present invention.

FIG. **8***a* presents the first sub-portion of the map in FIG. **3***a* that can be viewed on the screen of a portable device when the scale is magnified in accordance with the present invention.

FIG. **8***b* depicts the second sub-portion of the map in FIG. **3***b* that can be viewed on the screen of a portable device when the scale is magnified and the portable device has been physically moved in accordance with the present invention.

FIG. **8***c* illustrates the third sub-portion of the map in FIG. **3***c* that can be viewed on the screen of a portable device when the scale is magnified and the portable device has been physically moved in accordance with the present invention.

FIG. **8***d* shows the first sub-portion of the map in FIG. **3***a* that can be viewed on the screen of a portable device when the scale is magnified and the portable device has been physically moved to the initial position in accordance with the present invention.

FIG. **9***a* presents the MEMS (Micro-electro-mechanical System) comprising an inertial guidance system in accordance with the present invention.

FIG. **9***b* depicts a block diagram of a handheld device including the inertial guidance system of FIG. **9***a* in accordance with the present invention.

FIG. **10***a* illustrates the conventional map movement performed in a stationary portable device.

FIG. **10***b* shows the inventive portable device movement to view a stationary map that provides a Sliding Window perspective of a map in accordance with the present invention.

FIG. **11***a* presents a flowchart of locating items in a map when the map is moved in accordance with the present invention.

FIG. 11*b* depicts an inventive flowchart locating items in a map when the device or portable unit is moved in accordance with the present invention.

FIG. 12 illustrates a more detailed flowchart of the inventive portable device movement in accordance with the present invention.

FIG. 13*a* shows the representative map where a large scale or a first sub-scale portion of the representative map can be viewed depending on the scale on the screen of a portable hand held device with the ability to place identifiers on various sub-portions in accordance with the present invention.

FIG. 13*b* presents the magnified first sub-scale portion of the representative map indicating the identifiers in accordance with the present invention.

FIG. 14 depicts a flowchart of the inventive portable device movement follow the identifiers in accordance with the present invention.

FIG. 15*a* shows a 3-D representative map where a Z-axis direction is added to the X and Y-axes to view the large scale or a first sub-scale portion of the representative map in three dimensions in accordance with the present invention.

FIG. 15*b* presents the progress in the positive Z-axis direction of an image show to the user in slices in accordance with the present invention.

FIG. 15*c* depicts the movement away from the user by showing the tail (feathers) of the arrow in accordance with the present invention.

FIG. 15*d* presents the movement towards from the user by showing the head (point) of the arrow in accordance with the present invention.

FIG. 16*a* illustrates transceivers in a local environment in accordance with the present invention.

FIG. 16*b* illustrates a handheld unit with transceivers in a local environment in accordance with the present invention.

FIG. 16*c* illustrates a handheld unit with transceivers and a processor in a local environment in accordance with the present invention.

FIG. 17 shows a hand held device used in an application to avoid obstacles in attaining points in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1*a* illustrates a notebook computer with its pathways going to through the Internet to a server. The notebook computer **1-1** can wirelessly interconnect to a gateway **1-2** which along the path **1-4** connects up to the Internet **1-5**. The Internet **1-5** has a connection **1-6** to a server **1-7**. This path is bidirectional and allows the user of the notebook **1-1** to access the server's database for data, or to manipulate the server.

FIG. 1*b* presents a more descriptive illustration of the individual components that are in FIG. 1*a*. The entire system is in **1-8** which contains the notebook computer **1-17**, the interface **1-21** between the computer and the Internet **1-18**, the Internet itself, the interface between the Internet **1-18** and the servers, and a set of servers 0-N. The notebook **1-17** contains a keyboard **1-13** coupled to the processor by a network **1-12**, a screen **1-14** coupled to the processor by interface **1-11**. A communication bus **1-10** coupling the processor **1-9** to the memory **1-15** and a communication link **1-16**. The communication link **1-16** couples through the bi-directional interface **1-19** and **1-20** to the Internet **1-18**. The Internet can then couple to the servers **1-25** through **1-26** via the interconnect **1-24** and **1-23**.

FIG. 2*a* presents a portable hand-held device or a smart phone **2-1** coupled to the Gateway by **1-2**. The Gateway **1-3** is coupled to the Internet **1-5** by the interface **1-4** and the Internet **1-5** is coupled to the servers **1-7** by the interface **1-6**. The interconnects **1-2**, **1-4** and **1-6** are bi-directional allowing the portable unit or smart phone **2-1** to access the servers **1-7** for data or for the server to present data to the smart phone **2-1**. The smart phone has a display screen that currently is presenting icons of various applications (the array of rectangles).

FIG. 2*b* presents a block diagram of the smart phone **2-2**. The smart phone contains a processor **1-9** coupled by a bus **1-10** to a memory **1-15** and a communication link **1-16**. The processor also interfaces to a keyboard **1-13** through the interface **1-12** and to a screen **1-14** by the interface **1-11**. In fact, the screen can present a keyboard to the user. In addition, the processor can have other features which allow the user easier access to the device, as well as, providing additional input to the smart phone. For example, the smart phone can contain a voice recognition unit **2-3** that communicates to the processor by interface **2-3**. An accelerometer or a set of accelerometers **2-4** providing directions in three dimensions can also be located within the smart phone **2-4** and coupled to the processor by interface **2-5**. The touch screen **2-7** may be a sub-set of the screen **1-14** and can be sensitive to a finger touch sending the response via interface **2-6**. For audio input and output response, an earphone and a speaker **2-12** can couple audio to/from the processor by **2-13** and for visual input, a camera **2-11** can provide input to the processor via interface **2-10**. Lastly, the processor can couple externally through a wireless means **2-9** by the interface **2-8**. Additionally there can be other features within the smart phone that may not be listed here, as for example; power supplies, batteries and other such units which are very typical of smart phones but not illustrated to simplify the complexity of the diagram.

In FIG. 3*a*, the screen of a portable device is illustrated along with several features which can be displayed, for example, on a smart phone. Along the left boundary is a motion control **3-2** that can be depressed by a finger or thumb **3-3**. By depressing the motion control an image or section of the map is presented on the display. When a search is performed, a magnification can be reduced to encompass more of the local area. This allows the user to view adjacent items or locations that may be of interest to the user. For example, the location searched was Bell Labs but the user notices that the Watchung Reservation and Surprise Lake are nearby. Since the user enjoys hiking, the user remembers the relative positions of these locations.

In FIG. 3*a*, the motion control can be depressed to move a particular sub-image of the map of the screen **3-1** into the center. Below the motion control is a scale **3-4** with a solid pointer **3-5**. The scale provides the magnification state of the display or screen. The magnification increases as the pointer moves towards to the positive symbol while the magnification decreases as the pointer moves towards the negative symbol. Depressing the plus symbol moves the pointer upwards while depressing the negative symbol moves the pointer downwards. As the pointer moves towards the plus symbol; the image in the screen **3-1** is magnified. When the pointer moves toward the negative symbol at the other end of the scale; the image in the screen **3-1** is reduced or scaled down. Thus, by using the combination of the motion control **3-2** and the scale **3-4** together, a new sub-section of the map **3-9** can be displayed in the center and scaled (for example, see FIG. 3*b*).

Once the user selects a more magnified view of Bell Labs as illustrated in FIG. 3*b*, the user has a sense of where the Watchung Reservation and Surprise Lake are located. The user can then use the motion control **3-2** or slide their finger on the screen in the direction of either the Watchung Reservation or Surprise Lake at a magnification associated with the bubble **3-8** (slider at position **3-7**). However, it is easy to get

lost as one finger scrolls the map image by touching the screen or using the motion control 3-2. When the user gets lost happens, the user reduces magnification to find out their current location (returns back to FIG. 3*a*). When the pointer is at 3-5, the scale is set (as indicated by the bubble 3-6 illustrating the association of the two solid lined arrows) to provide the screen of the portable unit illustrated within the solid boundaries 3-1. As the solid pointer 3-5 is moved to and overlays the dotted pointer 3-7, the image within the dashed line boundary 3-9 is magnified to fill the full screen of 3-1; however, this magnification is not presented in FIG. 3*a* to simplify the diagram. In addition, when the motion control 3-2 is simultaneously depressed by the finger 3-3, a new image is presented within the dashed screen of 3-9 showing in this case the magnified location of Bell Labs, FIG. 3*b*. This new display would fill the original display screen 3-1 as depicted in FIG. 3*b*. The actual scale of 3-9 being equal to the scale of 3-1 has not been illustrated in FIG. 3*a* to simplify the diagram.

FIG. 3*b* depicts that the size of the display in 3-9 is identical to the size of the display in 3-1. For example, if the pointer is moved from 3-5 to 3-7 (as indicated by the bubble 3-8 illustrating the association of the two dashed lined arrows), the new display would present those components within the dashed region of 3-9. From this magnified image of the map, a more detailed description of the area surrounding Bell labs is presented. Some of the roads have been identified and named. In addition, the motion control 3-2 and the scale 3-4 which currently are presented outside the boundaries of the screen of the portable unit would be transparently superimposed over the image of the map and would be located within screen of the portable unit but have not been presented in this regard in order to further simplify the diagram.

FIG. 3*b* illustrates the case where the bubble 3-8 links the pointer 3-7 and to the screen of the portable unit 3-9. Note that the screen of the portable unit 3-9 has the same dimensions as the screen of the portable unit 3-1 in FIG. 3*a*. The slider 3-7 occupies the same location on the scale 3-4 as in FIG. 3*a*. However, the map in FIG. 3*b* provides a greater detail than the dashed box 3-9 in FIG. 3*a*. The dashed box 3-9 in FIG. 3*a* is not shown to scale to simplify the presentation and description of FIG. 3*a*.

In FIG. 3*c*, the finger 3-3 is in a new position on the motion control 3-2 (therefore, a different portion of the map will be presented) and when the pointer on the scale moves from 3-5 to 3-7, the sub-region 3-10 of the map 3-1 shows the Watchung Reservation being presented in the dashed screen 3-10. As before, this new sub-region 3-10 of the map would fill the original display screen 3-1 although this is has not been illustrated to reduced complexity of FIG. 3*c*. Similarly in FIG. 3*d*, because the finger 3-3 is in yet a newer position on the motion control 3-2 (another portion of the map is presented) and when the pointer on the scale moves from 3-5 to 3-7, the newer sub-region 3-11 of the map 3-1 shows Surprise Lake being presented in the dashed screen 3-11. As before, this newer sub-region of the map would fill the original display screen 3-1 although this is has not been illustrated to reduced complexity of FIG. 3*d*.

In FIG. 4*a*, the pointer 3-7 is now a solid line the dashed line surrounding Bell Labs is also a solid line. The scale shows the pointer 3-7 related to the screen of the portable unit 4-2 by the bubble 3-8. The previous slides of FIG. 3*a-d* provided the knowledge of where the Watchung Reservation and Surprise Lake are located with reference to Bell Labs. To get from Bell Labs to the Watchung Reservation while always keeping the pointer 3-7 in a constant position (same as the scale in FIG. 3*b*), the following steps are followed. Again, what is actually presented on the screen of the portable unit 4-2 is equivalent to the map presented in FIG. 3*b*. The remaining portions of the map 4-1 in FIG. 4*a* are not in the current view. However, the user remembers that the Watchung Reservation was to the lower right. Thus, the finger 3-3 depresses the motion control 3-2 to cause the map 4-1 to move in a direction shows according to the move map arrow 4-3 to slide in this portion of the map 4-1. The display currently presents the location of Bell Labs on the screen of the portable unit 4-2. The screen of the portable unit 4-2 would appear similar to that of FIG. 3*b*. In this case, the handheld stationary device 4-4 indicates that the device remains stationary while the map moves. If the map is moved in the direction of the arrow 4-3, the screen displays the map as the map is moving in the direction of the arrow 4-3 until the screen eventually presents the Watchung Reservation.

In FIG. 4*b*, the screen of the portable unit 4-7 is now shown presenting the Watchung Reservation. Note that the pointer 3-7 remains at the same scale as before and has not been moved. Now the user desires to move to Surprise Lake and remembers that Surprise Lake is located to the upper right. So the finger 3-3 is placed in a corresponding location of the motion control 3-2 to move the map 4-1. This will cause the background map to move in the direction of the move map arrow 4-5. Another method of moving the map is also possible by placing the finger on the directly on the screen and moving the finger across the screen in the direction of the arrow 4-5; the map will then follow the finger. The handheld stationary device 4-4 (note that this portable unit does not move, while the map is moved) will eventually present a different portion of the map. In FIG. 4*c*, this new portion of the map shows Surprise Lake which is illustrated within the screen of the portable unit 4-8.

In FIG. 5*a*, one embodiment of the invention is illustrated. In this case, instead of a detailed geographical map, a simplified map providing a few features of an idealized map is presented to simplify the discussion. The motion control 3-2 is at the top left while the scale 3-4 illustrates two pointers; a solid pointer 3-5 and a dotted pointer 3-7, in the same position as before therefore providing the same scale. Beneath the scale is a new icon or identifier called the Sliding Window identifier 5-9. The pointer at 3-5 corresponds to the main display screen 5-1. The remaining background images in the map have been removed to improve the description of the invention. For example, within the screen of the portable unit 5-1, there is only a star 5-2, an oval 5-3, a shaped structure 5-4, a triangle 5-5, and a rectangle 5-6. The bubble 3-8 relates the pointer 3-7 to the screen of the portable unit 5-7 with the same scale as before. The screen of the portable unit 5-7, although it's illustrated smaller here, will have the full-size of the display of the handheld device 5-1. The portable unit is a hand held device 5-8. FIG. 5*b* presents the screen of the portable unit 5-7 with the rectangle 5-6 scaled to the same size as the previous slide. Note that through the magnification process of scaling, the second screen of the portable unit 5-7 to have the same dimensions as the first screen of the portable unit 5-1, the rectangle 5-6 is also scaled appropriately. The diagonal of the screen is measured from corner 5-10 to corner 5-11.

The user can enter this Sliding Window mode several different ways. The user can tilt and a shift of the handheld unit in a certain order or sequence to initiate the handheld unit to enter the Sliding Window mode. Another possibility is to wiggle the unit a particular way, there can be a multitude of ways the unit can be moved to enter the mode. Another method is by voice command by stating "Sliding Window mode". Using verbal commands simplifies the process of entering into the mode. Finally, a button (on a touch screen or

a physical one on the unit) can be touched/depressed to enter the Sliding Window mode. This method provides an easy procedure to enter the mode. Similarly, an equivalent procedure can be used to leave the mode.

In FIG. 6*a*, the screen of the portable unit **5-7** is now being held by a user's hand grasped by the thumb **6-5** and the fingers **6-1** through **6-4**. The screen of the portable unit **5-7** presents a portion of the image of a stationary map **6-9** showing the rectangle **5-6**. In FIG. 4*a-c*, the map or image was moved while the portable unit remains stationary. The inventive embodiment in FIG. **6** uses a stationary map while the portable unit is moved. The background map in this case remains stationary as indicated by **6-9**. The objects of the image of a stationary map **6-9** include: the star **5-2**, the oval **5-3**, the shaped structure **5-4** and the triangle **5-5**. These objects are in the map but currently they are not displayed within the display of **5-17** because the physical size of the screen and the current scale (or magnification) only displays the rectangle **5-6** and its local vicinity. The screen will be located in front of the user at a comfortable distance from the user's face and the origin is assigned to this location (0, 0). The origin can be mapped to a point in the image of the stationary map. The user of the portable device moves the physical device in the direction of the arrow **6-7** remembering earlier (see FIG. Sa) that the oval was located to the upper right. The movement corresponds to 30° **6-8** as indicated within the compass **6-6**. The diagram within shows the 0°, 90°, 180° and 270° marks on a circle and one referring back to the arrow **6-7** and the new angle 30° **6-8** within the compass **6-6**. The image of a stationary map as indicated by **6-9**. Beneath the scale **3-4** is the Sliding Window identifier **6-10** that now contains a small arrow pointing in the direction of movement and the degree relationship 30° of the arrow. Both, the compass **6-6** and identifier **6-10** would be transparent and displayed on the screen.

The origin can be assigned to any point on the image of the stationary map. The mapping can be done by touch screen, entry of the address of the location, voice command or cursor control. The origin allows the user to select a reference point which allows the user to reach this reference point quickly or conversely use the reference point to base measurements with respect to this point.

The reference angle of 0° can be set by an initialization process by placing the X-axis, for example, on the two dimensional representation of the image of the stationary map. The unit can be moved back and forth in a plane perpendicular to the user along a horizontal line, for example, to indicate where the 0°-180° line exists. Since the user is facing the screen, the software within the unit can determine where the 0° reference angle is with respect to the user which would be located to the right of the user.

The distance that the portable device moves is determined by an inertial guidance system (described later) and this distance is related to the scale of the map. The scale of the map being viewed is known by the system. This scale could be, for example, a 10 cm displacement corresponding to 100 m used by the software to generate information that instructs the inertial guidance system to adjust distance measurement such that a 10 cm displacement corresponds to 100 m. As the user moves the portable unit, the screen of the portable unit presents a moving map to the user while the image of a stationary map is presented to the portable device. Since the screen and map have the same scale, the map on the screen substantially superimposes over the map of the image of a stationary map. In other words, the map on the screen mirrors or matches that portion of the stationary map. The user can now sense or feel the distance between location on the map by experiencing the distance and angle displacement.

In FIG. 6*b*, the portable device was moved until the display **5-7** presents the oval **5-3** within the display screen of the portable unit. The portable unit has been moved through a distance and direction corresponding to vector **6-11**. A vector has a magnitude (distance) and direction (angle). Once the portable unit presents the oval **5-3**, the unit is paused to view the image. Below the slider scale, the Sliding Window identifier **6-12** illustrates a circle indicating that the user has stopped movement of his portable device.

In FIG. 6*c*, the user now moves the screen of the portable unit **5-7** in a direction of 180° as indicated by the move portable unit arrow **6-13**. The compass **6-6** indicates a direction, in this case, indicating a 180° **6-15** movement as indicated by the arrow **6-13**. Once again, the map remains stationary while only the physical device held by the user is moved **6-13**. Below the slider is the Sliding Window identifier **6-14** indicating a 180° movement as indicated by the arrow and the indicated value of degrees. In FIG. 6*d*, the user is still moving the portable device and the display screen **5-7** in the same direction as indicated by the arrow. This is verified by the Sliding Window identifier below the slider which indicates that the arrow is pointed at 180°.

In FIG. 6*e*, the screen of the portable unit **5-7** is now paused over the star **5-2** which is shown on the display screen. The distance and direction between the oval **5-3** and a star **5-2** is illustrated by the vector **6-16**. The Sliding Window identifier **6-12** indicates that the user has stopped movement since the circle is within the box.

In FIG. 6*f*, the user now moves in the direction of the arrow **6-19**. As the user moves the portable unit, the user is observing the screen of the portable unit **5-7** and can see any minute details in the background the stationary map as it progresses along the direction of the arrow **6-19**. Below the slider the Sliding Window identifier **6-17** indicates the direction of movement of the portable unit by the arrow and the angular relationship of that arrow being 240°. Referring now to the compass **6-6**, the new degree movement of 240° **6-18** is entered.

In FIG. 6*g*, the screen of the portable unit **5-7** now presents the object **5-4**. In addition the distance and direction between the star **5-2** and the object **5-4** is presented by the vector **6-20**.

Below the slider since the portable device is stationary, the box indicates that the device is not moving by the zero within the identifier **6-12**.

In FIG. 6*h*, the user moves the screen of the portable unit **5-7** in the direction of the move portable unit arrow. Once again, the map remains stationary while only the physical device moves. While the portable unit moves the display screen presents any of the details associated with the map. Since the potable unit is moving, the Sliding Window identifier **6-10** below the slider presents the direction of movement of the unit by the arrow at 30°. The compass box **6-6** illustrates the 30° **6-8**.

In FIG. 6*i*, the user has stopped at the rectangular object **5-6** which is displayed on the screen of the portable unit **5-7**. The distance between the object **5-4** and the rectangle **5-6** is indicated by the vector **6-21** which shows the distance and direction. Note below the slider, the box with the circle indicating the movement has stopped since now the user is observing the rectangle and its local environment.

In FIG. 6*j*, the screen of the portable unit **5-7*d*** has been moved 45° along vector **6-22** to display the oval **5-3** within the display **5-7*a***. The Sliding Window identifier **6-27** below the slider presents the direction of movement of the unit by the arrow at 45°. Recapping, moving along the 180° dotted arrow

6-23, the screen of the portable unit 5-7*b* presents the Star 5-2. Moving along the 240° dotted arrow 6-24, the screen of the portable unit 5-7*c* views the object 5-4. The screen of the portable unit 5-7*d* can then return to the rectangle 5-6 by moving the unit along the 30° dotted arrow 6-25.

The innovative embodiment allows these distances and angles along the stationary map to be related to the movement of the screen of the portable unit by the user's hand. The physical movement of the portable unit in physical space is bonded to the stationary map in the user's mind. This allows the user to easily relate to the stationary map and allows the user to visualize and "feel" where the various locations are within the map in a physical sense.

This relation of the physical sense to the stationary map can be used to search and find an object that may be further away. Let's assume that the screen of the portable unit 5-7*d* is observing the rectangle 5-6 and that the user remembers that there was a triangle 5-5 in the map. The user knows that the triangle 5-5 was located to the lower right somewhere in the 5 o'clock direction. However, the exact location of the triangle 5-5 now needs to be searched since the user knows that the triangle is within the region 7-1 as illustrated in FIG. 7*a*. The first intention of the user is to move the screen of the portable unit 5-7 about 300° along the vector 7-2. According to the compass 6-6, a new angle take 300° 7-3 is placed on the circle. Below the slider is the Sliding Window identifier 7-4 illustrating the direction of the portable unit and its angle of 300°. In FIG. 7*b*, the user moves the screen of the portable unit 5-7 about 60° along vector 7-6 which adds a new tick 7-5 to the compass. Beneath the slider the Sliding Window identifier 7-7 indicates the arrow which presents the direction the user is moving the display and the degrees of 60°. Not finding the object of interest the triangle 5-5, the user continues the search.

In FIG. 7*c*, the user moves the screen of the portable unit 5-7 about 300° along vector 7-8 to finally position the triangle 5-5 in the screen. The Sliding Window identifier 7-4 indicates the direction the user moved the portable device by the arrow at 3000. Once the user finds to triangle 5-5, it is a very easy matter to come back to the rectangle 5-6 since that was the starting point along vector 7-9 as illustrated in FIG. 7*d* and the Sliding Window identifier 7-10.

Getting back to the origin (reference point) can be easily verified by the reader, by placing their hand in front of their face, which indicates the (0, 0) location (origin) that would correspond, for example, to where the rectangle 5-6 is located. Now move your hand to different locations within the plane perpendicular before you and one finds that one can always return to the (0, 0) location. Thus, even if the user gets lost searching for an object, the user can always return back to the origin. After finding the triangle 5-5, the process of returning to the origin is straightforward. To return back to the starting point of the where the rectangle 5-6 is located; the user merely moves their hand back in the center of his face. Thus, the reference point of 5-6 illustrating where the rectangle is easy to reestablish and present on the screen of the portable unit since the origin is located at the central common comfortable point of the user.

This technique of maintaining the bitmaps stationary and only moving the portable device can be applied to the map of Bell Labs, the Watchung Reservation and Surprise Lake that was investigated earlier. In FIG. 4*a-c* the map was moved while the screen of the portable unit 5-7 was maintained stationary. In FIGS. 5-8, the map remains stationary and the screen of the portable unit is moved. In FIG. Sa, the starting point or origin would be Bell Labs as indicated on the screen of the portable unit 5-7. The user moves the portable unit in the direction of the move portable unit arrow 8-2. The background image of a stationary map 8-1 exists in a database and as the portable unit moves, memory buffers are filled by the database to present to the user the map corresponding to the distance and angle to where the portable unit was displaced. Furthermore, as the portable unit is moving in a particular direction, the memory components corresponding to that direction are pre-fetched for quicker loading into the memory or cache. The Sliding Window identifier 8-3 as illustrated below the scale corresponds to 340° movement. In FIG. 8*b*, the user is viewing the Watchung Reservation on the screen of the portable unit 5-7 and decides to view Surprise Lake. Remembering where Surprise Lake was earlier, the user moves the physical device in the direction of the move portable unit arrow 8-4. The Sliding Window identifier 8-5 as illustrated below the scale corresponds to 40° movement. In FIG. 8*c*, the screen of the portable unit 5-7, after viewing Surprise Lake, is now moved back to its initial starting position of Bell Labs. The user moves the physical device along the move portable unit arrow 8-6 and returns to Bell labs as illustrated in FIG. 8*d*. The user has returned the portable unit 5-7 back to Bell Labs once again and at this point this is the reference location or origin as indicated earlier which would be in a comfortable position before the user's face. In addition since the user has stopped the movement of the portable unit 5-7 as indicated by the identifier 6-12.

An inertial guidance system 9-2 is illustrated in a MEMS integrated circuit 9-1 as depicted in FIG. 9*a*. Within the inertial guidance system are two boxes: the three axis accelerometer 9-4 and three axis gyroscope 9-3. The accelerometer senses the current acceleration of the portable unit along the three axes in distance per unit time. The gyroscope determines the current device orientation with respect to the three axes. The screen of the portable unit is displaying a map at a given scale with the origin of the map at the center of the screen. The user decides to view the region to the upper right of the map. The user moves the portable device into that physical space. Once the portable unit is moved, the information from the accelerometer and gyroscope sensors is applied to a microprocessor. In addition, the microprocessor uses the current scale of the map. The microprocessor calculates (based on the acceleration, orientation scale of the map, and origin position) the new position of the map that should be displayed in the center of the screen of the portable unit. The microprocessor issues instructions to the memory to provide the data corresponding to the newly calculated position. The data from the memory is processed and applied to the screen of the portable unit. The map corresponding to the new position is viewed on the screen by the user to provide the user with information regarding the contents of the map to the upper right of the map corresponding in scale to where the screen of the portable unit currently is. Since the processor calculation and memory access can occur in microseconds, the screen can display the contents of the new regions almost instantaneously to the user. Thus, the map that is displayed to the user on the screen of the portable device provides map information that is tightly bound to the positional location of the portable unit. This provides the user with an intuitive feeling of the positions of the objects in the map to the physical positions of portable unit to the user. The system behaves as if a stationary map exists behind the portable unit and the screen of the portable unit is a Sliding Window exposing the portion of the image of the stationary map behind the portable unit.

As the user moves the portable unit, the movement is sensed by the inertial guidance system. This information provided by the inertial guidance system can be applied to a

processor and an algorithm or a software program to determine the actual movement and relative direction of movement of the portable unit as the user moves the portable unit as indicated above. This information is used to display the correct portion of the stationary background map on the screen.

The interaction of the movement of the portable unit can be performed in a two dimensional plane (along the plane of the screen) or in a three dimensional space (along the plane of the screen and perpendicular to the screen). The term directional distance is a vector which has a vector representing distance and direction. In two dimensions, the vector would have distance and an angle measured to a reference axis. In two dimensions, the directional distance can be R (distance) and Theta. In a three dimensions, the system is usually described in the Cartesian system (X, Y and Z axes), although the cylindrical (P, Phi and Z) or spherical (R, Phi, Theta) systems may be appropriate if the map has the right symmetry. For instance, the directional distance in three dimensions can be defined as R (distance) and two angles: Phi angle and Theta angle. However, before interacting with the memory, all coordinate systems need to translated to the Cartesian system since the memory array would typically be arranged using the Cartesian system. A narrower term perpendicular distance implies the perpendicular distance from a surface of a plane. The magnitude of direction is the distance between two points on a map. The map could also be an image, an object or any bitmap. In addition, a two dimensional cross section would be the image of slicing an object with a plane. This image would contain the outline of the object.

The three dimensional system uses a vector that has a directional distance as in spherical coordinates. The Phi and Theta degrees are also used. These spherical coordinates can be translated into Cartesian coordinates when needed. The perpendicular displacement of the portable unit allows a map that is being viewed to represent a three dimensional structure, for example, a city with building where each building has several floors.

In FIG. **9***b*, a more detailed block diagram of the portable unit is presented. This unit has an antenna **9-6** coupled to an RF module **9-10**. The RF module is coupled to the processor **9-12**. An interface block that has a speaker **9-7** and a microphone **9-8** is coupled to the processor **9-12**. The processor **9-12** is also coupled to a display **9-9**, a memory **9-11**, a GPS (Global Positioning Satellite) **9-13** and software block **9-14**. The MEMS inertial guidance system **9-1** is coupled to the processor and to the software block to evaluate the movement of the portable handheld unit. The inertial guidance system provides movement data to a microprocessor and the microprocessor calculates the angle and the distance of the movement using the software block. An external memory or database can be used to store a portion of the image of a stationary map. An RF module **9-10** and antenna **9-6** can access an external database to supply the memory with data for the image of a stationary map. The GPS can, if desired, provide geographical locations data such as latitude and longitude.

FIG. **10***a* and FIG. **10***b* illustrate the difference between the two systems of when the map is moved and when the device is moved. In FIG. **10***a*, the map **10-1** is moved while the portable unit **4-2** remains stationary. When the map is moved as indicated by the arrow in FIG. **10**, the screen of the portable unit **4-2** remains stationary and displays the map as it is slid to the lower left exposing the upper right portions on the screen of the portable unit. The map **10-1** exists in a memory or a fast cache. These memories may need to be replenished by a database as the map presents itself to the screen of the portable unit. The movement of the map is accomplished by depressing the movement control **3-2** by a finger **3-3**. Other means of sliding the map include a touch screen where a finger sliding on the face of the screen or display drags the map. The table beneath indicates three aspects of the sliding map movement. First, the device remains stationary. Second, the movement of the map is done in increments and any scale associated with it to provide an intuitive grasp to the user of dimensions is lost. And lastly, because of this the map movement lacks an intuitive "feel to the user" as to regards to the distance and angles the map has been slid. With regards to the last item, the user cannot use his experience to easily identify where they have been and how to get back.

In contrast, FIG. **10***b* shows the innovative embodiment of the device movement technique. The compass **6-6** shows the movement of 45° of the device or portable unit **5-7** is moved in the direction of the arrow **10-4**. The screen of the portable unit **5-7** moves to the upper right and displays the stationary map on the screen of the portable unit. Thus, the user moves the portable unit **5-7** in the direction **10-4** while the map **10-3** remains stationary. The innovative device movement presents three aspects. The first is that the map **10-3** remains stationary. The second aspect is that the movement of the portable unit **5-7** directly correlates to dimensions of the map **10-3**. This is a big advantage since now as the user moves the portable unit; the distance that the user moves the portable unit through is related directly to the distance (at a given scale) of the map **10-3**. Thus, the movement of the device or portable unit directly correlates with the map dimensions. Lastly, the movement that the user experiences allows the user to "feel" and grasp the various locations by various positions in physical space. This provides for this innovative distance and angle understanding of the map **10-3** which remains stationary and is being scanned by the moving portable unit **5-7**.

Two flowcharts are illustrated. The first flowchart in FIG. **11***a* relates to the sliding of a map on the screen of a stationary unit. The second flowchart in FIG. **11***b* moves the screen of a unit across an image of a stationary map.

In FIG. **11***a*, the user enters the location into an online map **11-1**. The user then moves the map to find a new item **11-2** and if the item is not found **11-3**, then compensation is made if the map was scaled (**11-8** and **11-9**). If the user is lost **11-10** then the user should enter the location again **11-12** and repeat the previous steps. However, if the item had been found **11-3**, and the user knew their position **11-4** and desired more details **11-6**, then the map could be scaled to magnify the map **11-7**. Once the user extracted the information desired, the map is un-scaled **11-9** and if the user is not lost **11-10**, then the user could drag the map to find a new location **11-2**.

In FIG. **11***b*, the user enters the location into an online map **11-1**. The user then moves the device to find a new item **11-11** and if the item is not found, then compensation is made if the map was scaled. If the user is lost **11-10** then the user should move the device to the start position **11-14** and repeat the previous steps. However, if the item had been found, and the user knew their position **11-4** and desired more details, then the map could be scaled to magnify the map. Once the user extracted the information desired, the map is un-scaled and if the user is not lost, then the user could move the device to find a new item **11-11**. In this flowchart where the device or portable unit is moved, the "feel" that the physical space provides indicates that the path through the known position decision **11-4** would typically follow the arrowed line path **11-13** since the user improves their chances of knowing the position or location. Similarly, the user will less likely be lost **11-10** and follow will the arrowed line path **11-13**.

FIG. **12** illustrates another flowchart. The user enters the location or item **12-1**, the system then determines the memory size of the screen **12-2** and once the location or item is found,

the system retrieves the map from memory **12-3** and then determines if the item is sync'ed (typically, in the center of the screen) and maps this point to the reference (0, 0) or origin. If the unit is not synced, the flow moves to box **12-4** which allows the user to sync the (0, 0) point to any particular portion of the screen or display. Once the unit is synced with the (0, 0), the user then enters the Sliding Window mode **12-6**. The user moves into the retrieval of the adjacent and diagonal map blocks that are outside the field of view of the display **12-7**. At this point with the memory being filled, the user can move the device in physical space **12-8** to view the stationary map. As the user is moving the portable device, the system is calculating the physical angles and distances **12-9** and transferring these measurements to the stationary map. This shows the user those items that were previously out of view and also prepares determining if more memory will be required, particularly if the portable device is moving in the same and constant direction. Thus, if more memory is required **12-10** the system fetches more memory and continues the calculation of the distance and angle measurement **12-9**. If the memory is sufficient, the display continues showing the map with the details **12-11**. If the user still maintains the device in motion **12-12** there may be a need to get additional memory. However if the device remains stationary, the user can display the map the angle and the distance from the starting point **12-13**. If the user is satisfied with the results of this particular search, and the user is done **12-14** and then can exit the Sliding Window mode **12-15** then terminate the process **12-16**. However if the user wants to continue viewing the map, the user of the device can retrieve adjacent and diagonal map blocks **12-7** according to the direction that the user is moving returning the user back to moving the device in physical space **12-8**.

FIG. **13***a* illustrates yet another inventive embodiment of identifying where objects are when they are not in view within the display. The user usually starts by using a reduced magnification of the map to determine various adjacent aspects of the map. The map will be scaled down (decreased magnification) to see the adjoining components or adjacent members that the user may be interested in viewing. Once these components are located, the user may want to view these components at an increased magnification. For example, when the user uses the settings for the bubble **3-6** (the slide at **3-5** and screen **5-1**) the screen of the portable unit **5-1** shows a large area image of a stationary map is presented to the user. This image includes the star **5-2**, the oval **5-3**, the object **5-4** and the triangle **5-5**. In addition, in the very center it is a rectangle **5-6** which corresponds to the location of the (0, 0) or origin. When the user increases magnification according to the bubble **3-8** (the slide at **3-7** and **5-7**) the rectangle **5-6** would remain within the screen of the portable device **5-7**. Thus, when the slider is moved to location **3-7** corresponding to the bubble **3-8**, the user has magnified or scaled positively the image of the stationary background map including the rectangle **5-6**.

However, before doing so the user can place location markers on the objects using the Marker identifier **13-1**. The location markers can be letters, numbers, or shapes placed near the desired objects to be viewed. Other possibilities include placing the pointer of a mouse near the object and clicking, or verbally stating to location mark this point using vice recognition. For example, the location markers can be the squares **13-2** to **13-5** containing numbers. The number 1 marker is placed near the object **5-4**, the number 2 marker is placed near the star **5-2**, the number 3 marker is placed near the oval **5-3** and the number 4 marker is placed near the triangle **5-2**. The portable unit can be either stationary or moving. Once the slider moves to **3-7** to give the relationship of **3-8**, the rectangle **5-6** is magnified as depicted in FIG. **13***b*. The location marker identifier **13-10** indicates the system is enabled. After magnification, a road **13-11** becomes visible and the rectangle **5-6** has also been magnified. On this display screen **5-7** are those earlier location markers labeling corresponding arrows (or any equivalent symbols) to point to the matched objects in the screen in FIG. **13***a*. For example, to get to the number 1 marker **13-2** follow arrow **13-6**, to get to the number 2 marker **13-3** follow arrow **13-7**, to get to the number 3 marker **13-4** follow arrow **13-8** and to get to the number 4 marker **13-5** follow arrow **13-9**. This inventive embodiment allows for the map to be moved by either the motion control **3-2** or by sliding a finger along the screen. An alternative embodiment would be to move the physical portable unit while keeping the map stationary. All of the arrows and location markers are transparent allowing the user to see the map beneath them. As the user moves the device to one of the identifiers, for example, in the direction of the arrow **13-6** corresponding to the number 1 marker **13-2**, the three other arrows **13-7** through **13-9** continually adjust themselves to point to the current location of the other three objects. This innovative technique allows the user to mark locations, magnify the image of the map, and find all marked locations (without reverting to a lower magnification) by following pointers that direct the user to locations that are currently out of view of the screen. Furthermore, the user can find all marked locations without getting lost.

FIG. **14** illustrates yet another flowchart. The user enters the location or item **12-1**, the system then determines the memory size of the screen **12-2** and once the location or item is found, the system retrieves the map from memory **12-3** and then determines if the item is sync'ed (typically, in the center of the screen) maps this point to the reference (0, 0) or origin. If the unit is not synced, the flow moves to box **12-4** which allows the user to sync the (0, 0) point to any particular portion of the screen or display. Once the unit is synced with the (0, 0), the user then reduces the scale of the map **14-1**. The user analyzes and studies items in the local area **14-2**, clicks to place markers near the interesting positions or locations **14-3** (the positions can be marked with markers from a list, markers generated by the user, clicked and identified with a mouse click, clicked and voice activated), increases the magnification **14-4**, enters the window mode **15-5** and then the user selects a marker **14-6**. The user is given a choice **14-7**: manually follow the marker **14-8** or let the system auto route to the marker **14-9**. Once the user arrives at the position **14-10**, and analyzes and extracts what they needed, the user returns to the origin **14-11**. If the user still has other markers to view **14-12** then they select a different marker, or they terminate the search **14-13**. As the user is moving the portable device or the map is being moved, the system is calculating the physical angles and distances and transferring these measurements to the identifiers of the remaining unviewed markers.

So far everything has been done in a two dimensional space (X and Y axes), the technique can also be extended to 3-D (three dimensional) space (X, Y and Z axes). Three dimensions (3-D) are important for the description of buildings, the layout of each floor in a building, study of molecular models, analyzing the internal structure of solid objects, etc. There can be several ways of viewing the 3-D space. For instance, the X and Y axes may be moved by touching and moving fingers across the screen while the third dimension of the Z axis is displayed by a movement of the portable unit. Another way is for all three dimensions to be activated by the movement of the portable unit in three dimensions. Yet another way is to use a touch screen to move in two dimensions and have a third temperature scale to move in the third dimension. Speech and

voice recognition can be used to control the movement of the map, by stating for example, move left, move up, move down, move in, move out three units, etc. In addition, there can be many variations by combining the above methods.

FIG. 15*a* illustrates a 3-D map where the user moves the screen of the portable unit in a stationary map that is three dimensional. The plane **15-3** can be selected as a reference plane. The X, Y and Z axes **15-1** show that the user maintains the screen of the portable unit parallel to the X-Y plane. In addition, the direction of the X axis determines the reference 0° angle in this plane. Other possibilities allow the screen in the XZ or YZ planes and for that matter, at any orientation with respect to the three axes. Below the scale **3-4** is the 3-D identifier **15-2** with an arrow moving upwards. This would correspond to the path of movement in the vector **15-8**. The slider **3-7** is set to the same magnification as in the screen of the portable unit shown in FIG. **13***b* and beneath the scale is the 3-D identifier **15-2**. The reference plane **15-3** is equivalent to the map presented in FIG. **13***a*. This plane shows the star **5-2**, the object **5-4**, the triangle **5-5** and the rectangle **5-6**. The screen of the portable unit **5-7***a* is displaying the object **5-4**. After the perpendicular motion **15-8**, the user is now on plane **15-4** which contains a rectangle **15-5**, a pie shape **15-6** and a cross **15-7**. The user moves the portable unit along the vector **15-9** to display on the screen of the portable unit **5-7***b* the cross **15-7** and its local vicinity. The overall distance that the unit has moved is illustrated by the vector **15-10**. This vector has a distance, the magnitude of **15-10**, associated with the three dimension space. This vector **15-10** is positioned at an angle ϕ (phi) from the X-axis and at an angle Θ (theta) from the Z-axis, thus, providing the spherical coordinates for the movement.

FIG. **15***b* illustrates the screen nine (9) views of different planes on the screen of the portable unit **5-7***c* through **5-7***k*. According to the transparent head of the arrow **15-13**, the portable unit is being moved towards the user or out of the page. Due to the movement of the portable unit, each plane presents a cross sectional view of the object. The head is transparent to allow the object (or map) behind the head to be viewed. These views are presented when the unit is moved perpendicular to the plane of the page. These images presented need to be combined mentally by the user to visualize that the object being viewed is a sphere **15-11**. The solid image is effectively determined by a summation of all the cross sections of the object as the user moves perpendicular to the screen. If the user cannot guess what the object is, then the unit can present an image of a sphere.

FIG. **15***c* shows the movement away from the user by the downwards arrow labeled "9 to 1". The label means that the user is looking at 9, 8, 7 . . . to 1 in secession in FIG. **15***b* causing the portable unit to move away from the user; thus, the transparent tail **15-12** (or the feathers) of the arrow would be visible to the user. The tail is transparent to allow the object (or map) behind the tail to be viewed. FIG. **15***d* shows the movement towards the user by the upwards arrow labeled "1 to 9". The label means that the user is looking at 1, 2, 3 . . . to 9 in secession in FIG. **15***b* causing the portable unit to move toward the user; thus, the head **15-13** (or the point) of the arrow would be visible to the user. Both the tail **15-12** and head **15-13** are visible on the screen and are transparent.

The transparent tail and head can indicate to the user how far above or below a reference plane the current view on the screen of the portable unit is. As the user moves away from the reference plane, the diameter of the transparent head or tail can be made proportional to the distance above or below the reference plane. For a three dimensional display, the transparent head and tail symbols along with the projected transparent arrow on the plane of the screen, the user can follow the arrow to move to the correct planar location and then use the head or tails symbol to alter the depth or height above the plane corresponding to the screen to locate a missing object or location.

FIG. **16***a-c* illustrates other distance and movement measuring devices and procedures. FIG. **16***a* illustrates transceivers **16-1**, **16-2** and **16-3** placed in the local environment. These transceivers initialize their interface by emitting signals **16-4**, **16-5** and **16-6** and receiving the bi-directional signals **16-4**, **16-5** and **16-6** from these transceivers to determine a relative position of each transceiver with respect to the other. Then, in FIG. **16***b*, a portable unit **5-7** enters the environment and sends signals **16-7**, **16-8** and **16-9** between the portable unit **5-7** to the transceivers **16-1**, **16-2** and **16-3** to determine the relative position of the unit. This information is used by the unit **5-7** to determine the amount of movement, either with or without an interaction with the inertial guidance system. FIG. **16***c* illustrates an addition of an external processor **16-16** to aid in the calculation. In FIG. **16***c*, a portable unit **5-7** enters the environment and sends signals **16-7**, **16-8** and **16-9** from the portable unit **5-7** to the transceivers **16-13**, **16-14** and **16-15**. The transceivers **16-13**, **16-14** and **16-15** send their results **16-10**, **16-11** and **16-12** to the processor **16-16** to determine the relative position of the unit. The processor then sends a signal **16-17** to the portable unit **5-7** to provide the relative displacement of the unit. The signal can contain a wavelength or a short duration of energy that can be monitored and measured which indicates time of flight of the signal. The signal can be RF, audio, light or any other form of electromagnetic radiation. For example, ultra-sound can be used to measure the distance of the back of the portable unit to the closest obstruction. As the user moves the portable unit away or toward the obstruction, the Z-axis values is altered in a three dimension system. This distance is used to present the different planes within the three dimensional solid being viewed on the screen.

FIG. **17** depicts a 3-D space where the user can choose to remain on the same plane or move between planes. The goal is to get from home **17-1** to the star **17-2**, the first oval **17-3**, the second oval **17-4** or the triangle **17-5** without contacting any of the obstacles. The movement could be performed by moving the unit or by moving the map. This maze or puzzle can be a 2-D or 3-D game.

Finally, it is understood that the above description are only illustrative of the principle of the current invention. Various alterations, improvements, and modifications will occur and are intended to be suggested hereby, and are within the spirit and scope of the invention. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that the disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the arts. It is understood that the various embodiments of the invention, although different, are not mutually exclusive. The microprocessor is a device that is used to calculate the distance that the portable device moves and to interact with the database in the memory to provide the data corresponding to the new portion of the map associated with the distance change. The data from the memory is translated into display data by the processor. The microprocessor could also be a DSP or video processor. In accordance with these principles, those skilled in the art may devise numerous modifications without departing from the spirit and scope of the invention. The three dimensional space can contain detailed maps, objects, solids, floor plans, cities, underground pipelines, etc.

What is claimed is:

1. A method of moving a portable unit to present a new portion of a stationary background image on a screen of the portable unit comprising the steps of:

displaying a first image on the screen of the portable unit matched and superimposed to a corresponding portion of the stationary background image;

mapping a first point of the first image located in a center of the screen of the portable unit to a corresponding reference point in the stationary background image;

determining a first vector between the center of the screen of the portable unit and the corresponding reference point in the stationary background image;

moving the portable unit along at least one of the orientations of the first vector; and

presenting a new location in the new portion of the stationary background image on the screen of the portable unit.

2. The method of claim 1, further comprising the steps of:

forming portions of the stationary background image from one of a plurality of planes in a three dimensional space containing the corresponding reference point.

3. The method of claim 1, further comprising the steps of:

matching the corresponding reference point in the stationary background image to a known position of the portable unit relative to a user.

4. The method of claim 3, further comprising the steps of:

moving the portable unit to the known position, if lost.

5. The method of claim 1, wherein

the at least one of the orientations of the first vector which the portable unit is moved is either theta, phi, or the combination of phi and theta.

6. The method of claim 5, further comprising the steps of:

providing data corresponding to a movement of the portable unit from an inertial guidance system to a microprocessor, wherein

the microprocessor calculates the movement from a known position using either a Cartesian coordinate, a cylindrical coordinate or a spherical coordinate system, or any combination of the three by using an algorithm or a software program.

7. The method of claim 1, further comprising the steps of:

storing the stationary background image to an internal memory or an external database;

receiving data from the external database on an Internet by an RF module; and

storing the data corresponding to the background image of the stationary background image in the internal memory.

8. A portable unit comprising:

a first portion of a stationary background image displayed on a screen of the portable unit;

a first image and a second image located in the stationary background image;

the second image in the stationary background image displaced from the first image in the stationary background image by a directional distance;

the first image in the first portion of the stationary background image displayed on the screen of the portable unit, wherein

the portable unit is moved in at least one of the orientations of the directional distance to display on the screen of the portable unit the second image located in a second portion of the stationary background image.

9. The apparatus of claim 8, further comprising:

the stationary background image formed from one of a plurality of planes in a three dimensional space containing a reference point in the first image.

10. The apparatus of claim 8, further comprising:

a known position of the portable unit positioned from a user matched to a reference point in the first image within the stationary background image.

11. The apparatus of claim 10, wherein

the portable unit is moved to the known position, if lost.

12. The apparatus of claim 8, wherein

the at least one of the orientations of the directional distance which the portable unit is moved is either theta, phi, or the combination of phi and theta.

13. The apparatus of claim 12, further comprising:

an inertial guidance system providing data to a microprocessor corresponding to a movement of the portable unit, wherein

the microprocessor calculates the movement from a known position using either a Cartesian coordinate, a cylindrical coordinate or a spherical coordinate system, or any combination of the three by using an algorithm or a software program.

14. The apparatus of claim 8, further comprising:

an internal memory or an external database stores the stationary background image;

an RF module transfers data from the external database on an Internet; and

the data corresponding to the stationary background image stored in the internal memory.

15. A method of displaying at least one of a plurality of images in a stationary background image on a screen of a portable unit comprising:

displaying a portion of the stationary background image on the screen of the portable unit, wherein a first image of the plurality of images is located in the portion of the stationary background image and a second image located in a new portion the stationary background image is displaced from the first image by a directional distance; and

moving the portable unit in at least one of the orientations of the directional distance to display on the screen of the portable unit the second image in the new portion the stationary background image.

16. The method of claim 15, further comprising the steps of:

forming the portions of the stationary background image from one of a plurality of planes in a three dimensional space containing a reference point in the first image.

17. The method of claim 15, further comprising the steps of:

matching a known position of the portable unit from a user to the reference point in first image within the stationary background image.

18. The method of claim 17, further comprising the steps of:

moving the portable unit to the known position, if lost.

19. The method of claim 15, wherein

the at least one of the orientations of the first vector which the portable unit is moved is either theta, phi, or the combination of phi and theta.

20. The method of claim 19, further comprising the steps of:

providing data corresponding to a movement of the portable unit from an inertial guidance system to a microprocessor, wherein

the microprocessor calculates the movement from the known position using either a Cartesian coordinate, a cylindrical coordinate or a spherical coordinate system, or any combination of the three by using an algorithm or a software program.

21. The method of claim 15, further comprising the steps of:

storing the stationary background image to an internal memory or an external database;

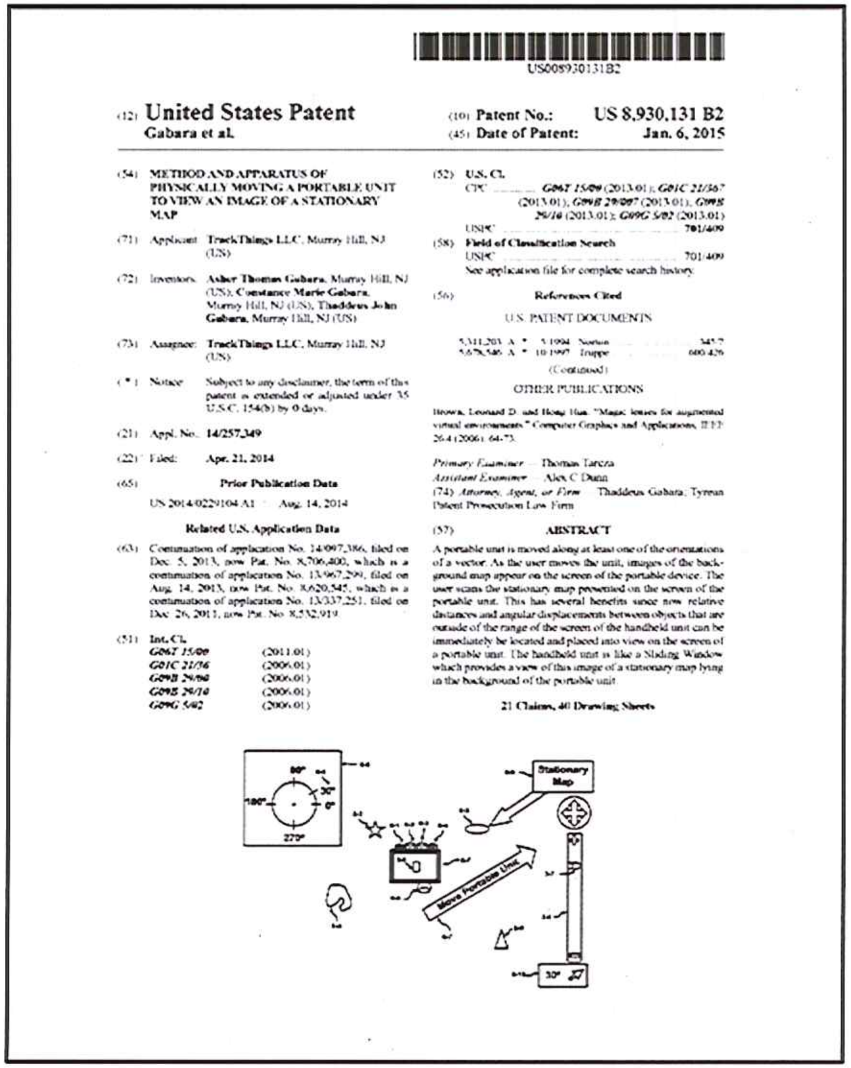
receiving data from the external database on an Internet by an RF module; and

storing the data corresponding to the background image of the stationary background image in the internal memory.

* * * * *

Exhibit 2

"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent



US008930131B2

(12) United States Patent
Gabara et al.

(10) Patent No.: US 8,930,131 B2
(45) Date of Patent: Jan. 6, 2015

(54) METHOD AND APPARATUS OF PHYSICALLY MOVING A PORTABLE UNIT TO VIEW AN IMAGE OF A STATIONARY MAP

(71) Applicant: TrackThings LLC, Murray Hill, NJ (US)

(72) Inventors: Asher Thomas Gabara, Murray Hill, NJ (US); Constance Marie Gabara, Murray Hill, NJ (US); Thaddeus John Gabara, Murray Hill, NJ (US)

(73) Assignee: TrackThings LLC, Murray Hill, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/257,349

(22) Filed: Apr. 21, 2014

(65) Prior Publication Data

US 2014/0229104 A1 Aug. 14, 2014

Related U.S. Application Data

(63) Continuation of application No. 14/097,386, filed on Dec. 5, 2013, now Pat. No. 8,706,400, which is a continuation of application No. 13/967,299, filed on Aug. 14, 2013, now Pat. No. 8,620,545, which is a continuation of application No. 13/337,251, filed on Dec. 26, 2011, now Pat. No. 8,532,919.

(51) Int. Cl.
G06T 15/00 (2011.01)
G01C 21/36 (2006.01)
G09B 29/00 (2006.01)
G09B 29/10 (2006.01)
G09G 5/02 (2006.01)

(52) U.S. Cl.
CPC G06T 15/00 (2013.01); G01C 21/367 (2013.01); G09B 29/007 (2013.01); G09B 29/10 (2013.01); G09G 5/02 (2013.01)
USPC 701/409

(58) Field of Classification Search
USPC 701/409
See application file for complete search history.

(56) References Cited

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(Continued)

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Primary Examiner — Thomas Tarcza
Assistant Examiner — Alex C Dunn
(74) *Attorney, Agent, or Firm* — Thaddeus Gabara; Tyrean Patent Prosecution Law Firm

(57) ABSTRACT

A portable unit is moved along at least one of the orientations of a vector. As the user moves the unit, images of the background map appear on the screen of the portable device. The user scans the stationary map presented on the screen of the portable unit. This has several benefits since now relative distances and angular displacements between objects that are outside of the range of the screen of the handheld unit can be immediately be located and placed into view on the screen of a portable unit. The handheld unit is like a Sliding Window which provides a view of this image of a stationary map lying in the background of the portable unit.

21 Claims, 40 Drawing Sheets

US8930131B2

United States

Download PDF   Find Prior Art   Similar

Inventor: Asher Thomas Gabara, Constance Marie Gabara, Thaddeus John Gabara

Current Assignee : TrackThings LLC ☒

Worldwide applications

2011 US 2013 US US 2014 US

Application US14/257,349 events

- 2011-12-26 • Priority to US13/337,251
- 2013-08-14 Priority to US13/967,299
- 2013-12-05 Priority to US14/097,386
- 2014-04-21 • Application filed by TrackThings LLC
- 2014-04-21 Priority to US14/257,349
- 2014-08-14 • Publication of US20140229104A1
- 2015-01-06 • Application granted
- 2015-01-06 • Publication of US8930131B2
- 2015-05-14 Assigned to TrackThings LLC
- 2019-10-10 • Application status is Active
- 2031-12-26 • Anticipated expiration

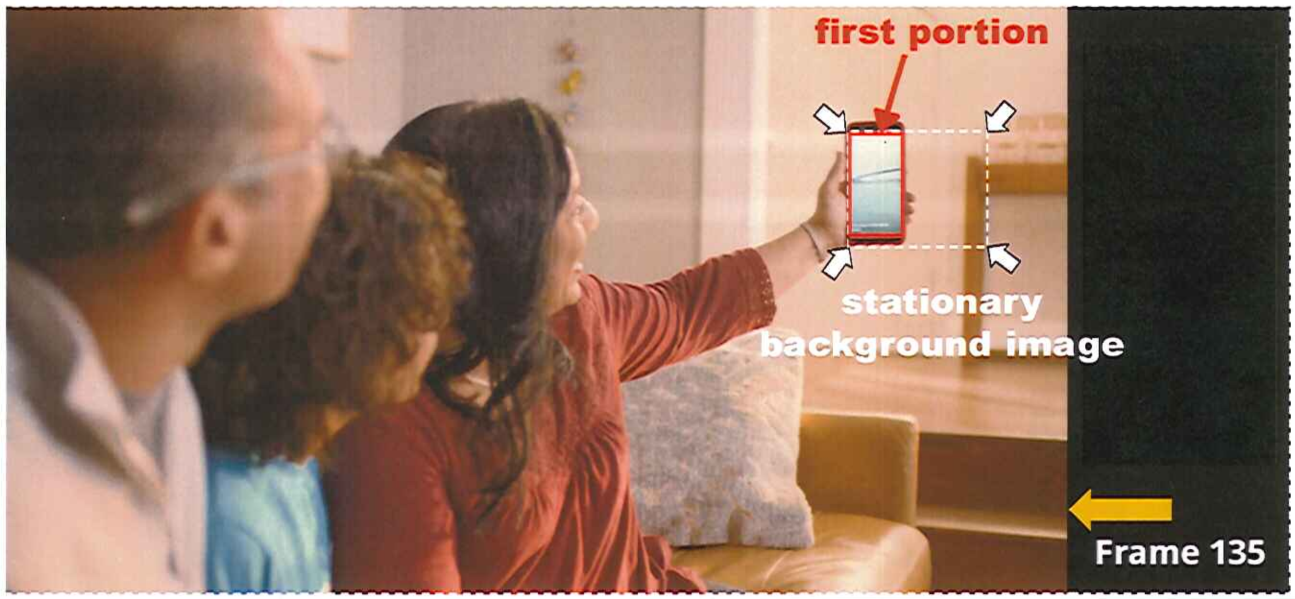
☒ Helen Gabara, President of TrackThings LLC, has assigned patent '131 and its parental lineage to Thaddeus Gabara on October 25, 2019.

"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

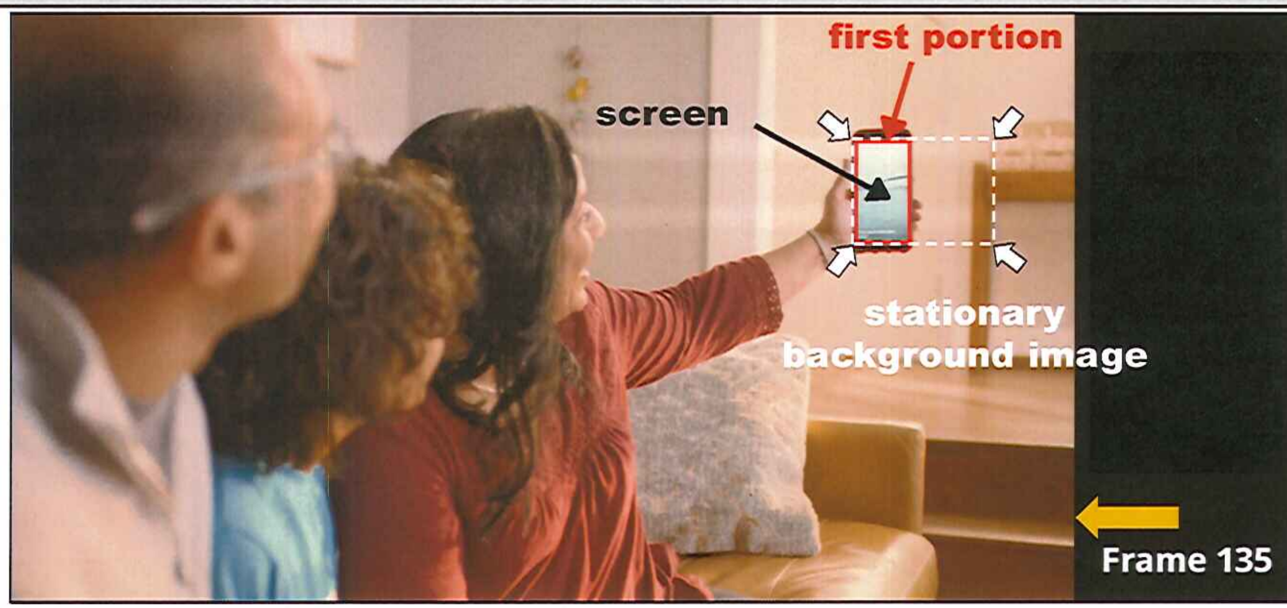
Gabara '131 Patent Claim 8	Attached Embodiment
A portable unit comprising:	

Frame 135 and **frame 149** were selected from the video posted on:
https://facebook360.fb.com/360-photos/ Extracted from site (on 10/8/19)
https://s0.wp.com/wp-content/themes/vip/fbspherical/media/360-panorama-loop-v2.mp4
Facebook 360

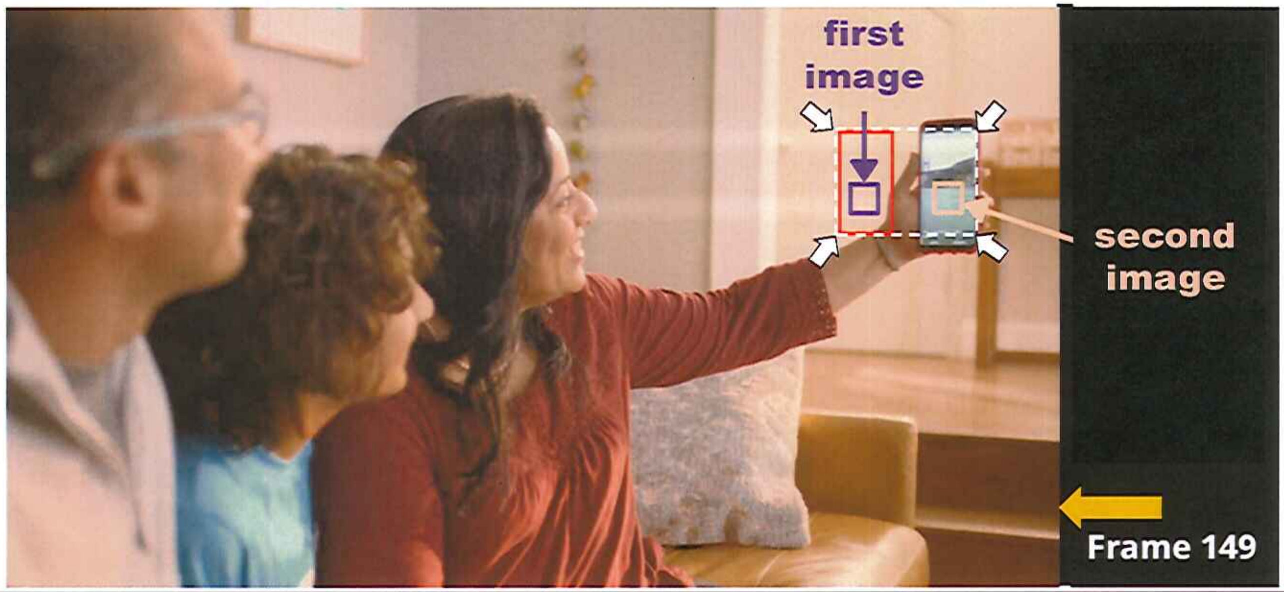
"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

Gabara '131 Patent Claim 8	Attached Embodiment
a first portion of a stationary background image	

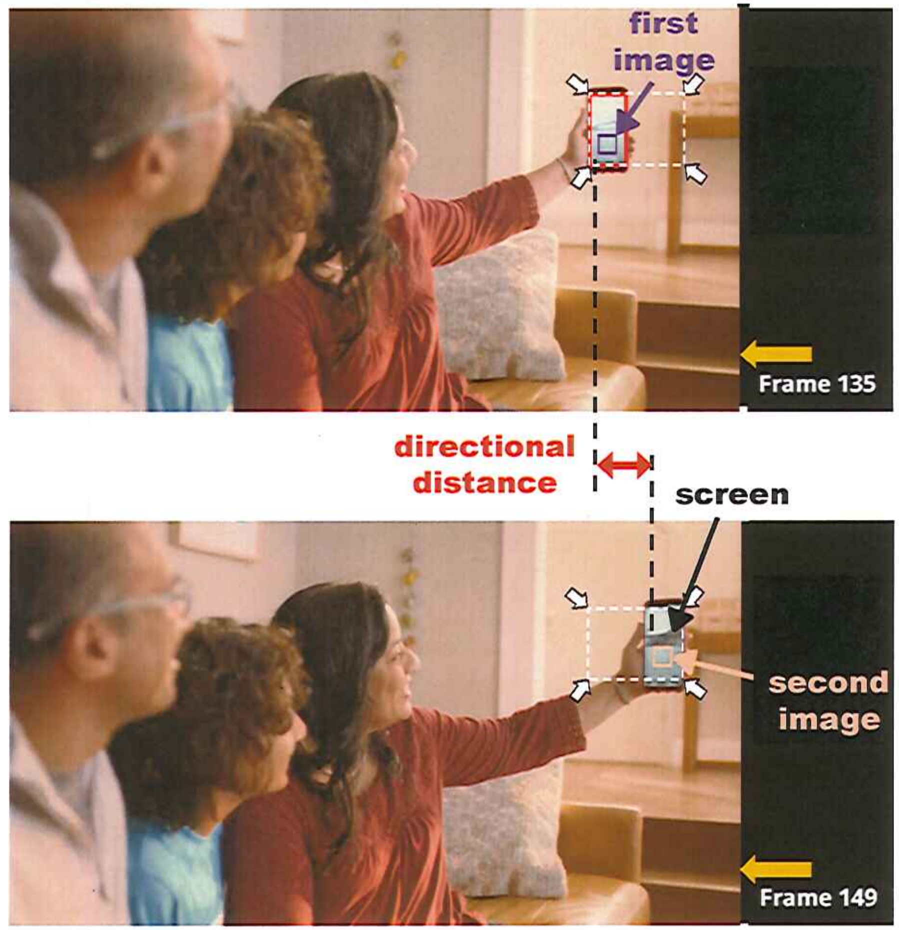
"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

Gabara '131 Patent Claim 8	Attached Embodiment
displayed on a **screen** of the **portable unit**;	

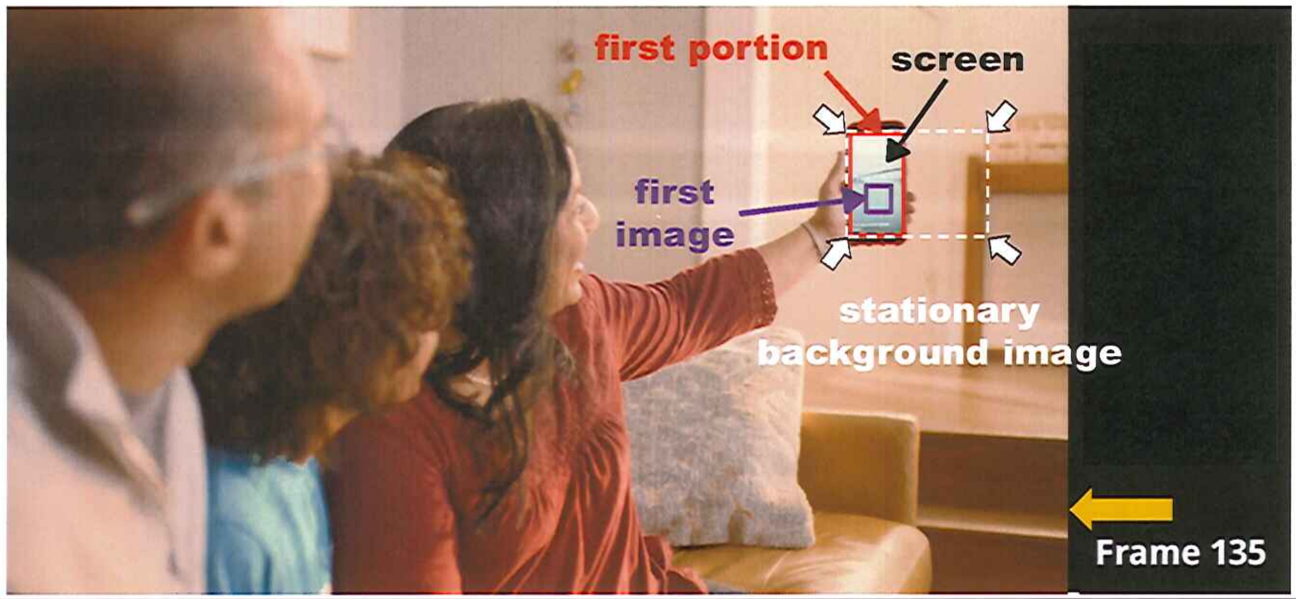
"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

Gabara '131 Patent Claim 8	Attached Embodiment
a first image and a second image located in the stationary background image;	

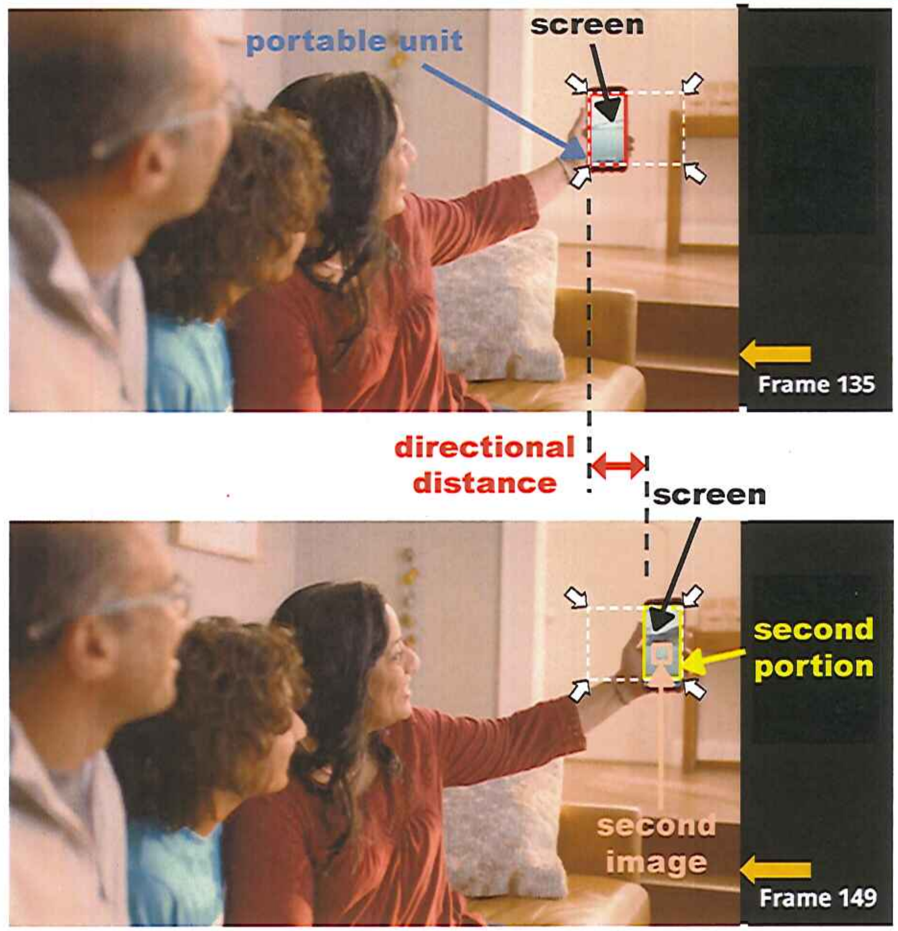
"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

Gabara '131 Patent Claim 8	Attached Embodiment
the second image in the stationary background image displaced from the first image in the stationary background image by a **directional distance**;	

"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

Gabara '131 Patent Claim 8	Attached Embodiment
the **first image** in the **first portion** of the **stationary background image** displayed on the **screen** of the **portable unit**, wherein	

"Facebook 360" and claim 8 of the Gabara 8,930,131 Patent

<table>
<tr><th>Gabara '131 Patent
Claim 8</th><th>Attached Embodiment</th></tr>
<tr><td>the portable unit is moved in at least one of the orientations of the directional distance to display on the screen of the portable unit the second image located in a second portion of the stationary background image.</td><td>

'moved in at least one of the orientations' – compare frames 135 and 149</td></tr>
</table>

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

THADDEUS GABARA

Write the full name of each plaintiff.

-against-

FACEBOOK, INC.

Write the full name of each defendant. If you need more space, please write "see attached" in the space above and attach an additional sheet of paper with the full list of names. The names listed above must be identical to those contained in Section II.

_____CV_______________

(Include case number if one has been assigned)

COMPLAINT

Do you want a jury trial?
☑ Yes ☐ No

NOTICE

The public can access electronic court files. For privacy and security reasons, papers filed with the court should therefore *not* contain: an individual's full social security number or full birth date; the full name of a person known to be a minor; or a complete financial account number. A filing may include *only*: the last four digits of a social security number; the year of an individual's birth; a minor's initials; and the last four digits of a financial account number. See Federal Rule of Civil Procedure 5.2.

Rev. 1/9/17

I. BASIS FOR JURISDICTION

Federal courts are courts of limited jurisdiction (limited power). Generally, only two types of cases can be heard in federal court: cases involving a federal question and cases involving diversity of citizenship of the parties. Under 28 U.S.C. § 1331, a case arising under the United States Constitution or federal laws or treaties is a federal question case. Under 28 U.S.C. § 1332, a case in which a citizen of one State sues a citizen of another State or nation, and the amount in controversy is more than $75,000, is a diversity case. In a diversity case, no defendant may be a citizen of the same State as any plaintiff.

What is the basis for federal-court jurisdiction in your case?

☑ **Federal Question**

☑ **Diversity of Citizenship**

A. If you checked Federal Question

Which of your federal constitutional or federal statutory rights have been violated?

This is a civil action for infringement of at least one United States Patent.
This is an action for violation of 35 U.S.C. §§271(a) and 35 U.S.C. §§271(b).

B. If you checked Diversity of Citizenship

1. Citizenship of the parties

Of what State is each party a citizen?

The plaintiff, Thaddeus Gabara, is a citizen of the State of
(Plaintiff's name)

New Jersey
(State in which the person resides and intends to remain.)

or, if not lawfully admitted for permanent residence in the United States, a citizen or subject of the foreign state of

____.

If more than one plaintiff is named in the complaint, attach additional pages providing information for each additional plaintiff.

If the defendant is an individual:

The defendant, Facebook, INC., is a citizen of the State of
(Defendant's name)

New York

or, if not lawfully admitted for permanent residence in the United States, a citizen or subject of the foreign state of

n/a.

If the defendant is a corporation:

The defendant, Facebook, INC., is incorporated under the laws of

the State of Delaware

and has its principal place of business in the State of California

or is incorporated under the laws of (foreign state) n/a

and has its principal place of business in n/a.

If more than one defendant is named in the complaint, attach additional pages providing information for each additional defendant.

II. PARTIES

A. Plaintiff Information

Provide the following information for each plaintiff named in the complaint. Attach additional pages if needed.

First Name	Middle Initial	Last Name
Thaddeus		Gabara

P.O. Box 512
Street Address

County, City	State	Zip Code
Union, New Providence	New Jersey	07974

Telephone Number	Email Address (if available)
(908) 821-6590	thadgabara@gmail.com

B. Defendant Information

To the best of your ability, provide addresses where each defendant may be served. If the correct information is not provided, it could delay or prevent service of the complaint on the defendant. Make sure that the defendants listed below are the same as those listed in the caption. Attach additional pages if needed.

Defendant 1: Facebook, INC.

First Name Last Name

Social Media Company

Current Job Title (or other identifying information)

1 Hacker Way,

Current Work Address (or other address where defendant may be served)

San Mateo, Menlo Park California 94025

County, City State Zip Code

Defendant 2:

First Name Last Name

Current Job Title (or other identifying information)

Current Work Address (or other address where defendant may be served)

County, City State Zip Code

Defendant 3:

First Name Last Name

Current Job Title (or other identifying information)

Current Work Address (or other address where defendant may be served)

County, City State Zip Code

Defendant 4: ________________________________

First Name Last Name

____

Current Job Title (or other identifying information)

____

Current Work Address (or other address where defendant may be served)

____

County, City State Zip Code

III. STATEMENT OF CLAIM

Place(s) of occurrence: (see attached complaint for additional information)

Date(s) of occurrence: (see attached complaint for additional information)

FACTS:

State here briefly the FACTS that support your case. Describe what happened, how you were harmed, and what each defendant personally did or failed to do that harmed you. Attach additional pages if needed.

(see attached complaint for additional information)

INJURIES:

If you were injured as a result of these actions, describe your injuries and what medical treatment, if any, you required and received.

(see attached complaint for additional information)

IV. RELIEF

State briefly what money damages or other relief you want the court to order.

(see attached complaint for additional information)

V. PLAINTIFF'S CERTIFICATION AND WARNINGS

By signing below, I certify to the best of my knowledge, information, and belief that: (1) the complaint is not being presented for an improper purpose (such as to harass, cause unnecessary delay, or needlessly increase the cost of litigation); (2) the claims are supported by existing law or by a nonfrivolous argument to change existing law; (3) the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery; and (4) the complaint otherwise complies with the requirements of Federal Rule of Civil Procedure 11.

I agree to notify the Clerk's Office in writing of any changes to my mailing address. I understand that my failure to keep a current address on file with the Clerk's Office may result in the dismissal of my case.

Each Plaintiff must sign and date the complaint. Attach additional pages if necessary. If seeking to proceed without prepayment of fees, each plaintiff must also submit an IFP application.

October 25, 2019
Dated

Plaintiff's Signature

Thaddeus | | Gabara
First Name | Middle Initial | Last Name

P.O. Box 512
Street Address

Union, New Providence | New Jersey | 07974
County, City | State | Zip Code

(908) 821-6590
Telephone Number

thadgabara@gmail.com
Email Address (if available)

I have read the Pro Se (Nonprisoner) Consent to Receive Documents Electronically:
☑ Yes ☐ No

If you do consent to receive documents electronically, submit the completed form with your complaint. If you do not consent, please do not attach the form.